UNEQUAL OUTCOMES IN UNEQUAL TIMES: THE DISTRIBUTIONAL CONSEQUENCES OF TURKEY'S UNORTHODOX POLICIES*

Yavuz Selim Kaçmaz[1], **Tolga Umut Kuzubaş**[2], **Islam Tarlacı**[3], and **Orhan Torul**[4]

[1] *Department of Economics, University of California–Davis*
[2,3,4] *Department of Economics, Boğaziçi University*

Abstract

This paper examines trends in wage, income, and consumption inequality in Turkey from 2002 to 2023, a period marked by unorthodox economic policymaking before and after the COVID-19 pandemic. Using microdata from the Turkish Statistical Institute's Household Budget Survey and the Survey of Income and Living Conditions, we document several salient distributional patterns. Wage inequality declined steadily over two decades, including during the recent episode of policy experimentation—coinciding with sustained minimum wage hikes and a rising share of university-educated workers. Income inequality also fell, though less markedly, before reversing in recent years due to widening disparities in capital and entrepreneurial income. In addition, consumption inequality rose dramatically during the unorthodox policy period, exceeding income inequality growth and driven primarily by a surge in durable goods consumption among top-decile households. These findings reveal the complex and multi-dimensional distributional consequences of unconventional economic policy in emerging markets and highlight the importance of examining inequality across multiple dimensions when evaluating policy effectiveness.

Keywords: Minimum Wage; Wage Dispersion; Income Distribution; Consumption Inequality; Economic Policy

JEL Classification: D31; E24; H31; J31

*We extend our sincere gratitude to M. Nazim Tamkoç for his invaluable feedback and computational assistance. We also thank the participants of the 11th Conference of the Society for the Study of Economic Inequality (ECINEQ 2025), PSU Altoona ICEE 2025, and the seminar participants at the Turkish German University and Ege University for their constructive comments and insights. Torul gratefully acknowledges the financial support of the Young Scientist Award (BAGEP) of Turkey's Science Academy and Boğaziçi University Research Fund grant number BAP 20050 for preparing this paper. All remaining errors are ours. The respective e-mail addresses of the authors are ykacmaz@ucdavis.edu, umut.kuzubas@bogazici.edu.tr, islam.tarlaci@bogazici.edu.tr, and orhan.torul@bogazici.edu.tr.

1 Introduction

Since 2018, the Turkish economy has undergone a dramatic transformation, characterized by severe macroeconomic shocks and the adoption of a series of unorthodox policy measures. The 2018 exchange rate crisis, followed by the COVID-19 pandemic, ushered in a period of pronounced volatility across both financial and real sectors. In response, the Turkish government and the Central Bank of the Republic of Turkey (*CBRT*) implemented policies that deviated sharply from standard macroeconomic prescriptions.

Diverging from the prevailing international approach of raising interest rates, the *CBRT* lowered its policy rate amid mounting inflationary pressures. The government also introduced novel mechanisms such as Foreign Exchange Protected Deposits (*Kur Korumalı Mevduat*, or *KKM*) to mitigate depreciation pressures on the Turkish Lira (*TRY*). These deposits effectively functioned as free call option derivatives for account holders, establishing a *TRY*-denominated floor at the market deposit rate while offering potentially higher returns—at the expense of Turkish taxpayers. Simultaneously, substantial increases in the minimum wage were enacted, directly affecting more than two-fifths of wage earners. While the aggregate economic effects of these interventions have been widely studied, their distributional consequences remain largely unexplored.

Although inequality dynamics during financial crises and macroeconomic instability have received extensive attention, relatively little is known about the distributional effects of unconventional monetary and fiscal policies—particularly in emerging market contexts where such policies are increasingly employed. Prior studies of Turkish inequality have largely focused on the pre-2018 period, leaving a critical gap in our understanding of how this recent episode of policy experimentation has reshaped economic disparities. This gap in the literature is particularly significant given that Turkey's recent policy experimentation offers a unique natural experiment for understanding distributional effects of heterodox policies.

This paper addresses that gap by providing the first comprehensive analysis of inequality dynamics in Turkey during this period of macroeconomic turbulence and policy heterodoxy. Specifically, we examine changes in wage, income, and consumption inequality between 2002 and 2023, with particular analytical focus on the critical post-2018 period of policy experimentation. Our multi-dimensional approach allows us to distinguish how different dimensions of inequality (wage, income, and consumption) responded to the evolving economic environment.

Our empirical analysis draws on two nationally representative microdata sources: the Turkish Statistical Institute's Household Budget Survey and the Survey of Income and Living Conditions. These rich datasets allow us to track changes in wages, incomes, and consumption patterns across the income distribution from 2002 to 2023, with particular emphasis on the post-2018 period of policy experimentation.

We document several salient patterns. Contrary to conventional expectations, wage inequality declined during this turbulent period, coinciding with sustained minimum wage hikes and a rapid increase in the relative supply of highly skilled labor. However, we observe a divergence between wage and income inequality: while wage inequality fell, income inequality rose in recent years, largely due to increasing concentration in capital and entrepreneurial incomes. Another notable development is the substantial rise in consumption inequality, which exceeded the growth in income inequality and was primarily driven by a sharp expansion in durable goods consumption among the richest decile. The greater dispersion in consumption changes—relative to income—suggests that higher-income households were better able to shield themselves from inflationary pressures, plausibly due to better access to credit markets and liquid assets.

This study contributes to the literature in three key ways. First, it offers the first systematic analysis of distributional outcomes in Turkey during the era of macroeconomic heterodoxy. Second, by jointly examining wages, incomes, and consumption, we provide a more granular and comprehensive understanding of inequality than studies focused on a single dimension. Third, our findings speak to broader debates on the distributional consequences of unconventional policy in emerging markets, demonstrating that such policies can generate complex, non-monotonic effects across different facets of household well-being. These insights are particularly relevant for policymakers in emerging economies considering nontraditional responses to external pressures and domestic constraints, highlighting the importance of evaluating distributional effects alongside aggregate macroeconomic outcomes.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature on inequality in Turkey, highlighting the contributions of this study. Section 3 describes the data and methodological approach employed in the analysis. Section 4 presents the empirical results, documenting the changes in wages, incomes, and consumption inequality during the study period. Section 5 discusses the implications of our findings and concludes.

2 Related Literature

Turkey has long been characterized by high levels of economic inequality relative to other OECD countries. Prior research has documented persistent inequality across various dimensions, including wages, incomes, and wealth. For instance, Tamkoç and Torul (2020) show that while wage, income, and consumption inequality in Turkey exhibited downward trends from 2002 to 2016, the country still ranked among the most unequal in the OECD over this period. Torul and Öztunalı (2018) further highlight that Turkey's wealth inequality is exceptionally high, even surpassing the levels observed in the United States and Russia, a finding corroborated by the more recent work of Ceritoğlu et al. (2023) using household finance data.

The sources of Turkey's high inequality are multifaceted. Aktuğ et al. (2021) uncover substantial heterogeneity in labor income profiles across education levels, gender, and public versus private sector employment, with a significant gender pay gap, especially for less educated workers. This aligns with Turkey's historically low female labor force participation documented in studies such as Filiztekin (2020) and Bakış and Polat (2015, 2023). Aydemir and Yazıcı (2019) and Öztunalı and Torul (2022) demonstrate that intergenerational educational mobility in Turkey is relatively low compared to developed countries, with persistence being driven largely by unequal access to tertiary education.[1] Demirtaş and Torul (2024) estimate that intergenerational earnings elasticity is approximately 0.5 between fathers and sons, placing Turkey among the least mobile economies.

Beyond these structural factors, macroeconomic developments have also shaped inequality dynamics in Turkey. Ekşi and Kırdar (2015) and Bakış and Polat (2015, 2023) show that minimum wage hikes in the 2000s contributed to declining wage inequality, with "price" or "wage" effects dominating "composition" effects. However, the extent to which these gains persisted or were eroded in the more recent period remains an open question. Sefil-Tansever and Yılmaz (2024) provide further insights into the potential spillover effects of the minimum wage, both within the formal sector and potentially across the informal labor market.

While extensive research on Turkish inequality predates 2018, recent contributions offer complementary insights. Bilgiç and Stoeffler (2025) document a surprising poverty decrease in 2021. Gemicioğlu et al. (2024), examining the period up to 2019, provide evidence that that price changes, influenced by indirect

[1] Regarding educational supply dynamics, Caner et al. (2024) analyze Turkey's significant 2006-2008 higher education expansion and find an increase in overall attainment but a persistent failure to reduce the gender gap, partly due to field-specific enrollment changes.

taxes, increase real consumption inequality, while Tekgüç and Eryar (2025) find an enhanced redistributive impact of fiscal policy up to 2019, albeit with burdens from indirect taxes. Nevertheless, a comprehensive examination of how wage, income, and consumption *inequalities* evolved across Turkey's recent turbulent post-2018 period of unorthodox economic policies remains lacking. This paper addresses this gap by investigating these largely unexplored distributional consequences.

Analyzing these distributional impacts is crucial, as the Turkish government's actions during this period represented a marked departure from conventional macroeconomic management. For instance, the aggressive minimum wage hikes directly targeted the lower end of the earnings distribution. Meanwhile, introducing the FX-Protected Deposit scheme primarily benefited wealthier households. Therefore, it is essential to understand how these diverse policy interventions shaped the evolution of wages, incomes, and consumption across different segments of the Turkish population.

This paper contributes to the literature by providing the first comprehensive analysis of how economic inequalities in Turkey have changed in the aftermath of the 2018 exchange rate crisis and the subsequent policy responses. By examining the distributional impacts of these recent developments, this paper offers important insights into the Turkish economy's ongoing transformation and the extent to which the government's actions succeeded in addressing longstanding inequality challenges. Our findings also have broader implications for understanding the distributive consequences of unorthodox macroeconomic policies, particularly in emerging market economies facing complex economic challenges and shocks.

3 Data and Key Variables

We use data from two primary sources: the Household Budget Survey (*HBS*) and the Survey of Income and Living Conditions (*SILC*), both conducted annually by the Turkish Statistical Institute (*TurkStat*). These two microdata sets are the principal sources for examining economic inequalities in Turkey (Tamkoç and Torul, 2020). Throughout our empirical analysis, we follow *Review of Economic Dynamics* (*RED*): Cross-Sectional Facts for Macroeconomists's standardized guidelines to ensure that our results are compatible with the previous literature (Krueger et al., 2010).

3.1 Household Budget Survey (*HBS*)

HBS provides detailed information on household consumption expenditure and disposable income at the household level, along with individual-level information on earnings and labor supply. We use *HBS* data between 2002 and 2023 due to data availability.[2]

3.2 Survey of Income and Living Conditions (*SILC*)

SILC has been conducted since 2006 to obtain income distribution statistics compatible with the European Union's official statistics. Like *HBS*, its unit of observation is *household*, providing detailed income source information for individuals in at least 10,700 households annually, representative at the NUTS-1 level. However, unlike *HBS*, *SILC* lacks consumption data. Our *SILC* sample covers the 2006-2023 period, including the COVID-19 pandemic.[3]

3.3 Data Adjustments and Harmonization

3.3.1 Wage and Labor Earnings

We use *individual* as the unit of analysis for wage calculations. We convert nominal variables into real terms by deflating them with *TurkStat*'s Consumer Price Index (*CPI*). To examine wage inequality, we follow *RED* guidelines and concentrate on 25-59-year-olds who annually earned more than half the average monthly minimum wage in 2002 (i.e., 174 Turkish Liras).[4]

To calculate the *wage* rate, we adhere to *RED* guidelines and construct *annual earnings* of person i in year t as follows:

$$ae_{i,t} = nw_{i,t} + rw_{i,t} + p_{i,t} + b_{i,t} + \alpha^{TUR}(nse_{i,t} + rse_{i,t} + ag_{i,t}) \tag{1}$$

where $ae_{i,t}$ denotes annual earnings, $nw_{i,t}$ and $rw_{i,t}$ denote annual cash and other real payments, $p_{i,t}$ and $b_{i,t}$ denote annual premiums and bonuses received from employers, α^{TUR} denotes the share of labor income in Turkey's national income, $nse_{i,t}$ and $rse_{i,t}$ denote cash and other real incomes from self-employment, and $ag_{i,t}$ denotes net agricultural income. We set α^{TUR} to 0.42 by following the initial five-

[2] *TurkStat* suspended *HBS* conduct during 2020 and 2021 due to the COVID-19 pandemic. *HBS* surveys conducted before 2002 (e.g., *HBS* in 1994) lack continuity and nationwide representativeness and are excluded from our analysis.

[3] Note that the reference year in *SILC* is the preceding calendar year. Thus, utilizing *SILC* 2006-2024 microdata, our analysis covers the 2005-2023 period.

[4] We also exclude individuals who did not report hours worked for our wage calculations. For further descriptive statistics see Table B.1.

year estimates by *OECD* Database and Penn World Table 10.0. This parametrization presumes that 42% of self-employment and agricultural income, if any, can be considered a part of labor earnings, as in the case of national averages.[5]

We calculate *annual hours worked*, $ah_{i,t}$, as hours worked in a week multiplied by the average number of weeks worked in the last 12 months.[6] Finally, we calculate the wage rate by dividing annual earnings by annual hours worked:

$$w_{i,t} = \frac{ae_{i,t}}{ah_{i,t}} \tag{2}$$

Following Krueger et al. (2010), we also report gender, education (university and high school), and experience premiums in wages, the details of which we append to the Appendix.[7]

3.3.2 Income and Consumption

In line with the *RED* guidelines, we analyze income and consumption inequality at the *household* level. Our income variable is the after-tax and transfers disposable income of households. We also analyze the subcomponents of income, such as capital income and entrepreneurial income, depending on data availability. We use total consumption as our primary consumption measure and, following Krueger et al. (2010), also present results for non-durable consumption as well as durable consumption.[8] We use the *OECD* (Oxford) equivalence scale to equalize income and consumption series.[9]

3.4 Measures of Inequality

To comprehensively assess inequality, we use four metrics: the variance of the natural logarithm, the Gini coefficient, the `P90/P50` ratio, and the `P50/P10` ratio, following *RED* guidelines. The variance of the logarithm captures overall dispersion within the distribution. The Gini coefficient provides an alternative mea-

[5] Our findings remain robust across alternative α values. While different coefficients produce smoother trends due to scaling differences, the overall direction and timing of inequality changes remain unchanged.

[6] Data on the number of months worked in the last 12 months were unavailable in the 2012 wave of *HBS*. We imputed this value for 2012 by calculating the mean of the sample averages 2011 and 2013.

[7] We defined full-time workers as someone who works over 30 hours in a week as *TurkStat*'s related questions changed over the years and showed inconsistencies.

[8] Non-durable consumption includes spending on food, alcohol, tobacco, personal care items, fuel, utilities, public services, household operations, public transportation, gasoline and diesel oil, apparel, reading items, entertainment spending, lodging expenses, education expenditures, and out-of-pocket health expenditures. Durable consumption includes spending on rent, furniture, domestic appliances, medical goods, motor and non-motor vehicles, digital devices, and jewelry.

[9] The *OECD* equivalence scale adjusts household income by member number and age to enable comparisons across different household structures. The Modified *OECD* version assigns a weight of 1 for the first adult (14+ years), 0.5 for each additional adult (14+ years), and 0.3 for each child (0-13 years).

sure of inequality based on relative mean differences. The P90/P50 ratio shows the gap between the top 10% and the median (50th percentile) of the distribution, while the P50/P10 ratio highlights the disparity between the median and the bottom 10%. We discuss the details of these inequality measures in the Appendix.

4 Results

4.1 Wage Inequality

Figure 1 shows the evolution of wage inequality from 2002 to 2023 using four key metrics: variance of log wage, P90/P50 ratio, P50/P10 ratio, and the Gini coefficient, as outlined by Krueger et al. (2010).[10] We use local polynomial regressions to show long-term trends and provide annual point estimates, which are displayed together.

Our findings show that the variance of log wage, P90/P50 ratio, and Gini coefficient exhibit similar trends. These metrics demonstrate a non-monotonic decline until the 2008 Great Recession, followed by a temporary increase lasting about four years, and then a renewed downward trend continuing to the present. In contrast, the P50/P10 ratio does not follow this pattern; it remains mostly stable before 2008 and shows mixed trends afterward. Overall, despite variations in levels, the downward trend observed across these four inequality metrics indicates a decline in wage inequality.

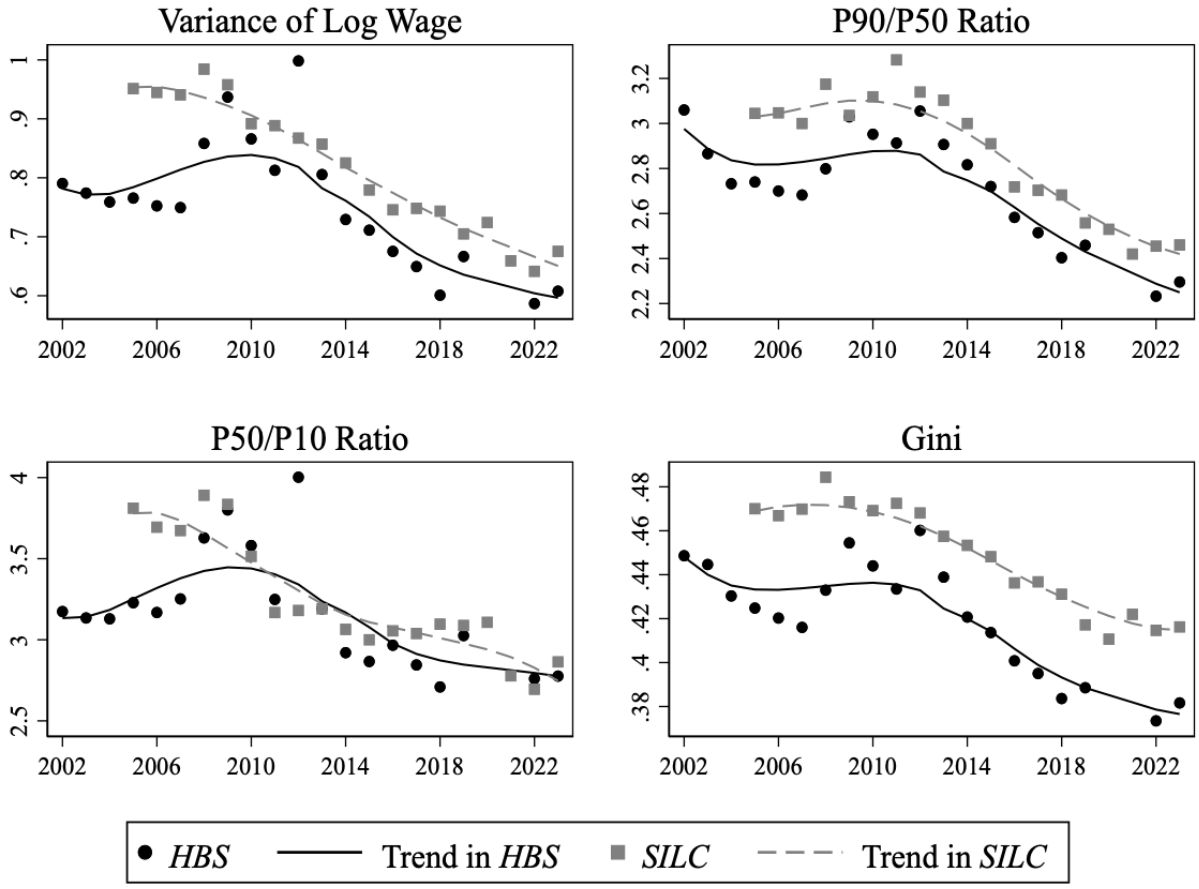
The impact of the minimum wage policy on wage inequality trends in Turkey is significant. Figure B.2 shows the changes in median wage relative to the minimum wage and the percentage of workers earning below 105% of the minimum wage. This figure indicates a possible connection between increases in the minimum wage and wage convergence, consistent with Tamkoç and Torul (2020)'s findings on wage inequality in Turkey. This relationship is particularly pronounced during periods of rapid minimum wage growth compared to inflation, such as in 2016 when the minimum wage increased by 30% while inflation was approximately 8% (Figure B.1).[11]

Driven by the observed link between minimum wage policies and wage compression, we explore this relationship using the methodology of Engbom and Moser (2022) from their study of Brazil. We observe

[10] We present the descriptive statistics of the two data sets (*HBS* and *SILC*) in Table B.1.

[11] Since Turkey does not have an hourly minimum wage, we utilize monthly minimum wage data to construct Figure 3, Figure B.2, and Figure B.4.

Figure 1: Wage Inequality

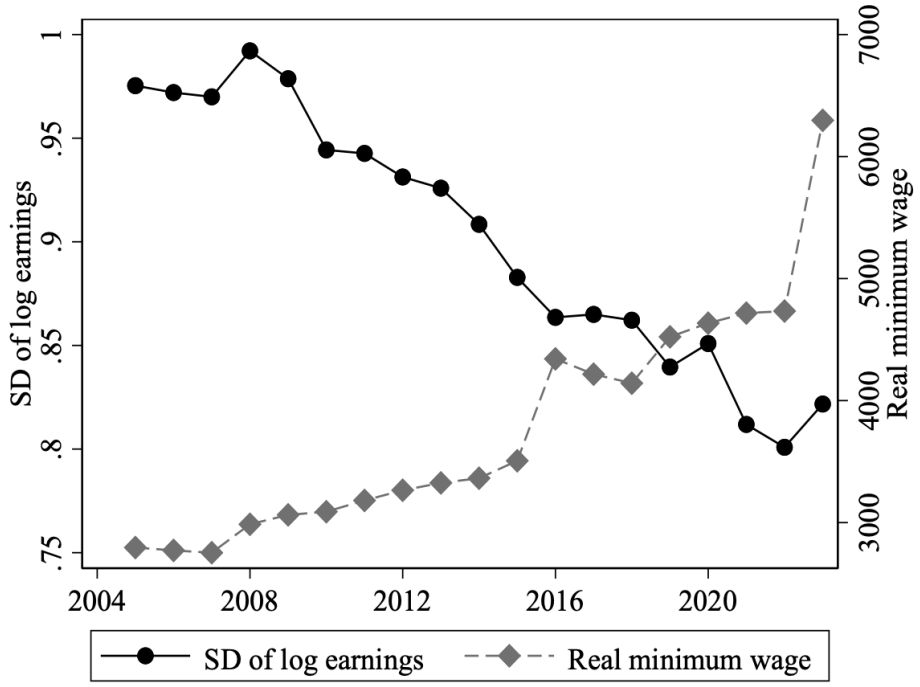


† *Notes*: This figure illustrates the evolution of wage inequality. Results are reported using the *HBS* and *SILC* data sets. Black solid lines with circles denote results from the *HBS*, while gray dashed lines with squares represent *SILC* data. Smoothed lines are derived using local polynomial regression to identify trends. The unit of observation is the individual. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the COVID-19 pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

comparable patterns in the Turkish labor market, with a strong negative correlation (−0.896) between the standard deviation of log earnings and the real minimum wage, as illustrated in Figure 2. This correlation is particularly noteworthy given the significant proportion of Turkish employees (44% in 2023) earning wages at or near the minimum wage threshold.

To provide context for these findings, the International Labour Organization's 2020-2021 global wage report indicates that minimum-to-median wage ratios are generally higher in developing countries (International Labour Office, 2020). However, while Brazil's ratio is consistent with the average for developing countries, Turkey's ratio ranks among the highest globally, highlighting the significance of the observed relationship between wage compression and minimum wage levels in Turkey.

Figure 2: Wage Inequality and the Real Minimum Wage



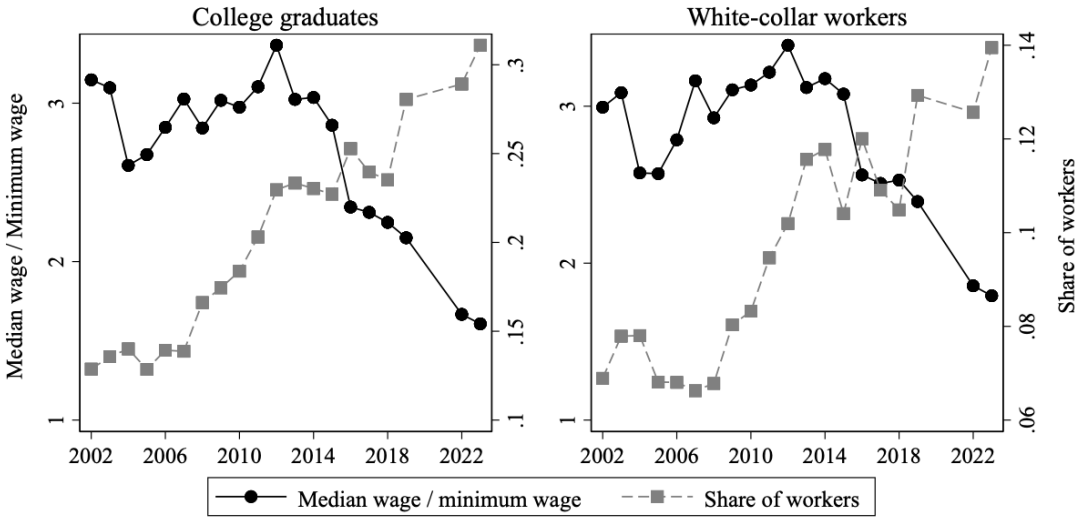
† *Notes*: This figure illustrates the evolution of wage inequality and the real minimum wage (in constant 2002 Turkish Liras). Data is derived from *SILC* for wage-related calculations covering the period 2005-2023. The correlation between the variables is -0.896 (significant at p =1%).

The cyclical dynamics of the Turkish economy suggest that wage inequality is likely to exhibit countercyclical behavior, increasing during economic downturns and decreasing during periods of expansion (Tamkoç and Torul, 2020). This theoretical expectation aligns with the empirical trends observed in our data. Following the economic contraction in 2020, Turkey's economy experienced a notable recovery, with Gross Domestic Product (GDP) growth rates reaching 11.4% in 2021, 5.5% in 2022, and 5.1% in 2023.[12]. This period of economic recovery corresponds with the countercyclical trend in wage inequality, as illustrated in Figure 1 and Figure B.2. During this phase, all our measured indicators of inequality reached their lowest recorded levels. Concurrently, the fraction of individuals earning below at or below 105% of minimum wage attained its peak with 44% in 2023. It is noteworthy, however, that a slight increase in these inequality measures was observed in 2023. Over the entirety of our analysis period, the contemporaneous correlation between the Gini coefficient and GDP growth is -0.60, a figure that is statistically significant at the 1% level.

Our analysis indicates a notable change in educational attainment within the Turkish labor market. As shown in Figure 3, the proportion of individuals with at least a university degree more than *doubled*

[12] Data is obtained from the World Bank Database.

Figure 3: Educational and Occupational Breakdown



† *Notes*: This figure illustrates the evolution of wages compared to minimum wage using educational attainment and occupational breakdown. The unit of observation is individual. The study period spans from 2002 to 2023. Due to the suspension of the *HBS* data collection during the COVID-19 pandemic in 2020 and 2021, data for these years are unavailable. The correlation between the variables in the first graph is -0.664 (significant at p =1%), while in the second graph, it is -0.506 (significant at p =5%).

from 2004 to 2023. This trend corresponds with national statistics in Figure B.17, which show a significant increase in tertiary education completion, rising from 9% to 25% of the adult population during the same period.

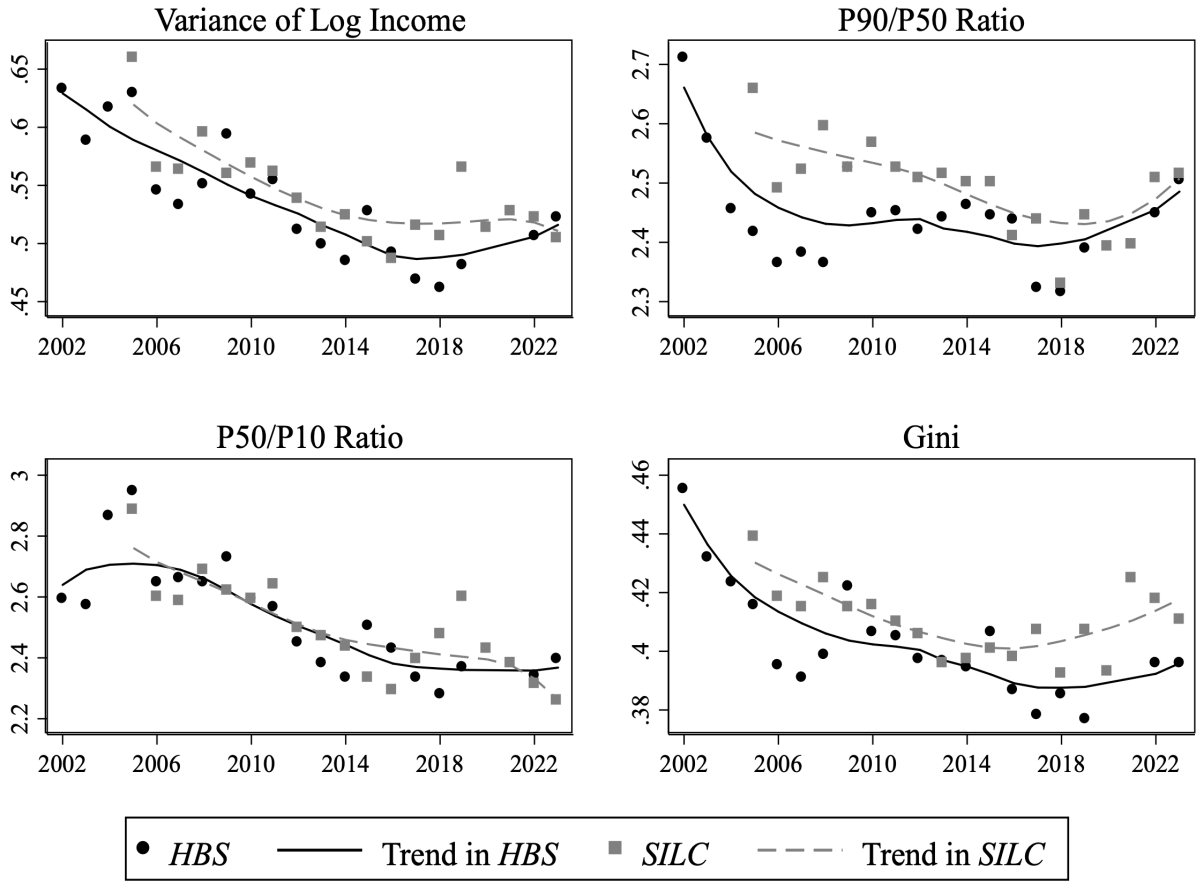
To evaluate the impact of this changing educational landscape, we compare wage trajectories relative to the minimum wage for college graduates. Figure 3 reveals a significant trend: a decline in the relative earnings of individuals with tertiary degrees. These individuals experienced a decrease in wages relative to the minimum wage following the significant increase in the minimum wage in 2016. This trend continues throughout the period of unconventional monetary policy, with *HBS* data indicating that the average earnings for a college graduate declined from 2.15 times the minimum wage in 2019 to 1.67 times in 2022, and further to 1.61 times in 2023.

4.2 Income Inequality

Figure 4 presents the evolution of income inequality for four different measures using the *HBS* (2002-2023) and *SILC* (2005-2023) data sets.[13] The figure indicates that overall income inequality decreased until the late 2010s and exhibited a slight upward trend in the most recent period. Specifically, the Gini coefficient,

[13] As discussed in the previous section, we utilize *household* as our unit of observation for the income and consumption calculations, and we equivalize both series using the *OECD* equivalence scale.

Figure 4: Inequality in Equivalent Disposable Income



† *Notes*: This figure illustrates the evolution of equivalent disposable income inequality. Results are reported using the *HBS* and *SILC* data sets. Black solid lines with circles denote results from the *HBS*, while gray dashed lines with squares represent *SILC* data. Smoothed lines are derived using local polynomial regression to identify trends. The unit of observation is the household, with income series equalized using the *OECD* equivalence scale. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

as measured in the *HBS* data set, declined from 0.45 in 2002 to 0.38 in 2019, then rose to 0.40 in 2022 and remained at that level in 2023. This pattern—decreasing inequality until the late 2010s followed by a modest increase thereafter—is consistent with the trend observed in the variance of log income. Our findings regarding declining income inequality in the pre-2018 period, characterized by relative economic and political stability compared to the subsequent period of exchange rate volatility and unconventional policy responses, align with the results of Filiztekin (2015) and Tamkoç and Torul (2020). Moreover, our study extends the existing literature by documenting a modest rise in income inequality during the early 2020s.

While overall income dispersion decreased until the late 2010s and slightly increased thereafter, as evi-

denced by the variance of log income and the Gini coefficient, the trend and magnitude of changes differed between below-median and above-median income groups. During the pre-2018 period, the decline in the P50/P10 ratio was more pronounced than the decrease in the P90/P50 ratio. Specifically, as measured in the *HBS* data set, the P50/P10 ratio decreased from 2.95 in 2005 to 2.27 in 2018, while the P90/P50 ratio fluctuated between 2.53 and 2.32. This disparity suggests that the reduction in income inequality during the 2002-2018 period was predominantly driven by the contraction in the dispersion of income groups below the median.

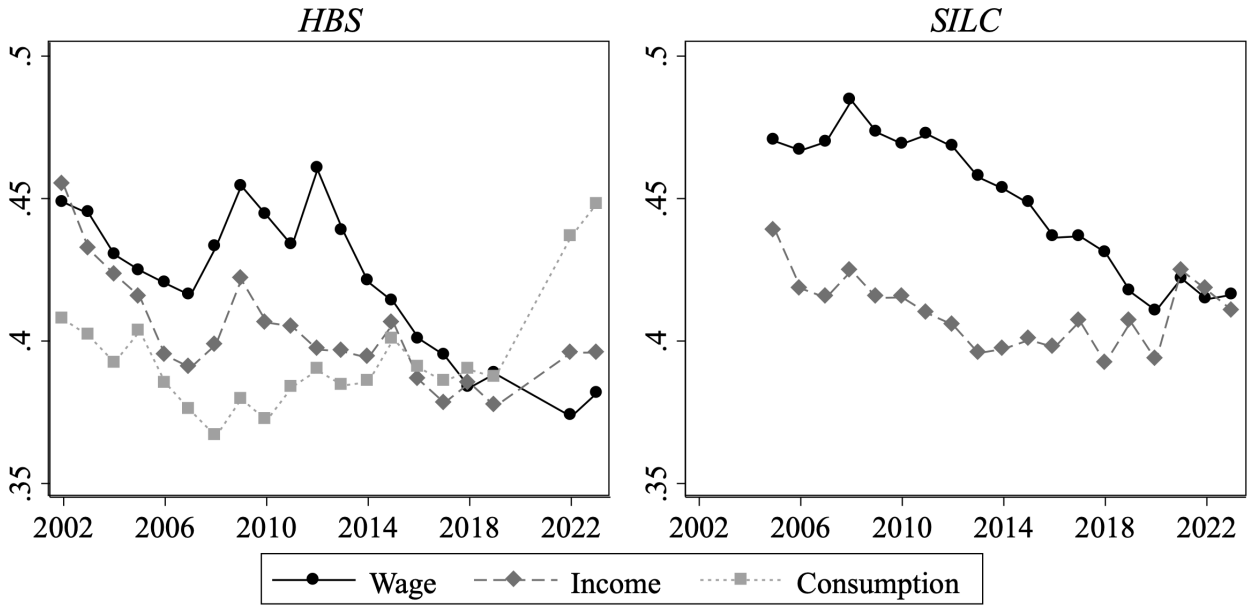
Furthermore, these metrics responded differently to the unconventional economic policies implemented after 2018. The P90/P50 ratio increased, though to varying degrees, in both the *HBS* and *SILC* data sets, while the P50/P10 ratio remained relatively stable or even decreased slightly. Collectively, these findings indicate that the dispersion in the below-median income groups contracted more substantially than in the above-median income groups throughout the study period.

Although wage and income inequality exhibited similar trends before 2019, the rate and magnitude of change differed between them. Specifically, Figure 5 shows that the decline in income inequality is less pronounced than the decline in wage inequality throughout the period in both the *HBS* and *SILC* data sets. Moreover, we observe an upward trend in income inequality in the most recent period, while wage inequality exhibits no such increase. Figure 5 also indicates that, while income inequality was historically lower than wage inequality, it surpassed wage inequality in the most recent period.

Several factors may contribute to this disparity between wage and income inequality estimates. It is important to note that our unit of analysis differs between wage and income inequality: we use individuals for wage inequality and households for income inequality. One potential explanation, therefore, relates to the equivalization method used in adjusting household income inequality.[14] To examine the effect of household formation on income inequality, we replicate the analysis using raw household incomes instead of equivalized incomes. Figure B.6 reveals that the trend in raw household income inequality remains consistent with that found in equivalent disposable income inequality, with a decline until the late 2010s, followed by an increase in the recent period. Therefore, this analysis suggests that changes in household size across

[14] If changes in household sizes were not uniform across different income groups, this could account for the discrepancy with wage inequality estimates. For instance, assuming constant household incomes, if low income groups experienced a greater relative decline in household size compared to high income groups, the same income would be distributed among fewer individuals in low-income households, increasing equivalent household income and resulting in reduced inequality. However, Figure B.5 indicates that household sizes across different income groups declined in similar proportions, suggesting that changes in household composition did not significantly contribute to the observed disparity between wage and income inequality trends.

Figure 5: Gini Coefficients for Wage, Income, and Consumption



† *Notes*: This figure illustrates the evolution of wage, income, and consumption inequality. Gini coefficient results are reported using the *HBS* and *SILC* data sets. The left panel shows the evolution of wage, income, and consumption inequality estimated from the *HBS* data. The right panel depicts the evolution of wage and income inequality derived from the *SILC* data, as consumption information is not available in this survey. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

different income groups did not impact the observed trend in income inequality using equivalized incomes.

Another potential factor contributing to the disparity between wage and income inequality trends could be the increase or stagnation in inequality within non-labor income components, such as capital income and transfer payments, which are excluded from wage calculations. Rising inequality in these components may offset the decline in labor income inequality, potentially leading to an increase in total income inequality, depending on the relative magnitudes of change.

To investigate this disparity, we calculate Gini coefficients separately for labor income, capital income, entrepreneurial income, and transfer payments, and plot the results in Figure B.10.[15] Consistent with wage inequality trends, Figure B.10 confirms the downward trend in labor income inequality. However, it also reveals no decline, and potentially even an increase, in capital and entrepreneurial income inequality, particularly pronounced in the *SILC* data set. Specifically, according to the *HBS* (*SILC*) data set, the Gini coefficient for capital income increased from 0.89 (0.83) in 2005 to 0.93 (0.88) in 2023, while that for entrepreneurial income changed from 0.92 (0.85) to 0.94 (0.92). Overall, these findings indicate that despite decreasing labor

[15] For this analysis, households reporting no income were assigned a value of 0 and included in the Gini coefficient calculations.

income inequality, the relatively slow reduction in income inequality until the late 2010s and the subsequent upward trend in the most recent period, compared to wage inequality, are largely attributable to rising, or at best constant, inequality in capital and entrepreneurial income. The measurement of these non-labor income components, particularly at the top end, is often complicated by the "missing rich" phenomenon in household surveys, where affluent households may be underrepresented or may underreport such incomes (Lustig et al., 2020).

To further explore whether the increasing inequality in capital and entrepreneurial income results from an increase in the share of households without such income (*extensive margin*) or increasing dispersion among households with non-zero capital and entrepreneurial income (*intensive margin*), we analyze the share of households without these income components (Figure B.11) and the Gini coefficient for households with positive capital and entrepreneurial income (Figure B.12).

Our analysis provides stronger evidence for the *extensive margin hypothesis*, particularly in the *HBS* data set. First, Figure B.11 shows an increase in the share of households with zero capital and entrepreneurial income over time. Specifically, the proportion of households with zero capital income increased from 0.70 in 2002 to 0.79 in 2023, while those with zero entrepreneurial income rose from 0.80 to 0.85 during the same period. On the other hand, Figure B.12 indicates no distinct trend in the Gini coefficient for households with non-zero capital and entrepreneurial income.

Results from the *SILC* data set, however, provide evidence for both *extensive* and *intensive margin hypotheses*. Figure B.11 reveals that the share of households with zero capital income increased from 0.49 in 2005 to 0.61 in 2023, and those with zero entrepreneurial income rose from 0.63 to 0.79. Additionally, the Gini coefficient for these income components showed an upward trend in Figure B.12, particularly in the latter half of the analyzed period. This difference may also partially explain the divergence in income inequality trends at the end of the study period between the *HBS* and *SILC* data sets observed in Figure 4.[16]

[16]The discrepancy between estimates from the *HBS* and *SILC* data sets is notable, particularly for capital and entrepreneurial income. We caution future researchers using the *SILC* data set, as it appears to underreport low income groups in recent surveys. For example, *SILC* data indicates that only 25 percent of workers in Turkey earned less than 105% of the minimum wage in 2023, with no significant increase over time. This seems highly unlikely given Turkey's labor market conditions. In contrast, the *HBS* data set shows this figure to be approximately 45 percent. Therefore, researchers should be cautious when using *SILC* data, especially for analyses focused on lower income groups.

4.3 Consumption Inequality

Figure 6 illustrates the evolution of inequality in total consumption —the sum of durable and non-durable consumption— from 2002 to 2023, using various inequality measures.[17] Each panel in Figure 6 depicts a U-shaped pattern in the evolution of consumption inequality. The overall dispersion of consumption, as measured by the variance of log consumption and the Gini coefficient, declined until the Great Recession in 2008, remained relatively stable throughout the 2010s, and increased sharply in 2022 and 2023.

The increase in consumption inequality after 2019 is particularly notable, with the Gini coefficient rising from 0.38 in 2019 to 0.45 in 2023 and the variance of log consumption increasing from 0.48 in 2019 to 0.63 in 2023. This increase is so pronounced that consumption inequality significantly surpassed income inequality in the same year, with the variance of log income at 0.52 and the Gini coefficient for income at 0.40. This finding suggests that Turkey's economic challenges since 2018 have had a more substantial impact on the distribution of consumption than on income distribution.

While the variance of log consumption and the Gini coefficient identify overall trends, they do not reveal details about the specific segments of the population where the distribution contracted or expanded. The P90/P50 and P50/P10 ratios provide additional insights into the general trends outlined above. Figure 6 suggests that variations in consumption inequality among above-median income groups are the primary determinant of overall consumption inequality trends, as fluctuations in consumption inequality within below-median income groups were comparatively modest throughout the period under study.

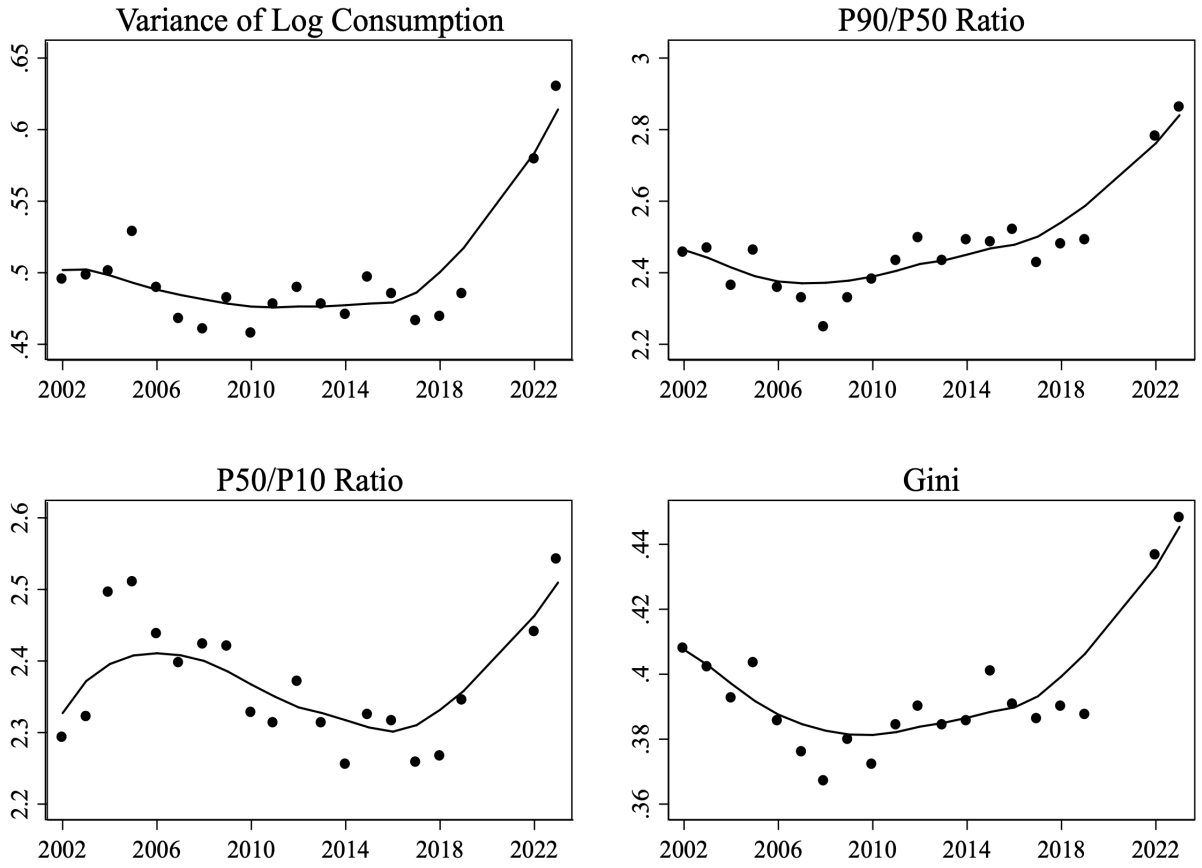
Regarding the sharp increase from 2019 to 2022, the results indicate that a significant portion of the rise can be attributed to increased consumption dispersion among the above-median income groups. Specifically, the P90/P50 ratio increased from 2.49 to 2.78, while the increase in the P50/P10 ratio was comparatively modest, rising from 2.34 to 2.44. Similarly, the initial decrease in consumption inequality until 2008 appears to have been primarily driven by a narrowing dispersion in consumption among above-median income groups, with the P90/P50 ratio decreasing from approximately 2.50 to 2.20. During the 2010s, although the P90/P50 ratio exceeded the P50/P10 ratio, both remained relatively stable.[18]

Given the unusually sharp increase in consumption inequality during the most recent period, we inves-

[17] This analysis utilizes only the *HBS* data set due to the absence of consumption data in *SILC*. Data for 2020 and 2021 are unavailable, precluding analysis for those years.

[18] The increase in the P50/P10 ratio from 2022 to 2023 further contributed to the overall rise in consumption dispersion, resulting in the variance of log consumption reaching its peak in 2023.

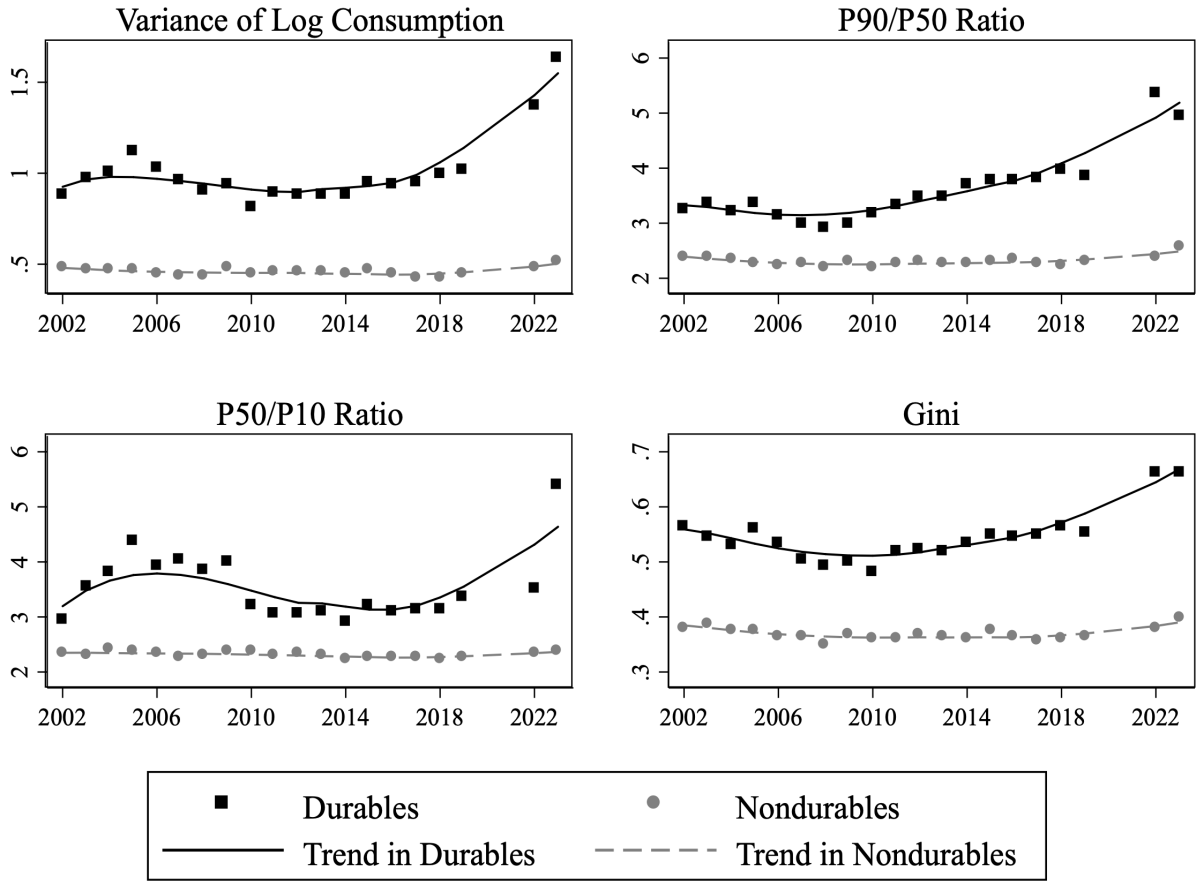
Figure 6: Consumption Inequality



† *Notes*: This figure illustrates the evolution of consumption inequality. Results are reported using the *HBS* data set. Smoothed lines are derived using local polynomial regression to identify trends. The unit of observation is the household, with consumption series equalized using the *OECD* equivalence scale. The study period spans from 2002 to 2023. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are unavailable.

tigate potential drivers of this trend. A useful approach is to break down consumption inequality into its durable and non-durable components. Figure 7 illustrates the separate evolution of inequality in durable and non-durable consumption across households. We observe a divergence between durable and non-durable consumption inequality trends in 2022, as reflected in the variance of log consumption, the P90/P50 ratio, and the Gini coefficient. Specifically, while durable consumption inequality increased substantially, changes in non-durable consumption inequality remained relatively limited. For durable consumption, the Gini coefficient rose from approximately 0.50 to 0.66, and the variance of log consumption increased from

Figure 7: Durable and Non-durable Consumption Inequality



† *Notes*: This figure illustrates the evolution of durable and non-durable consumption inequality. Results are reported using the *HBS* data set. Black solid lines with squares denote durable consumption inequality, while gray dashed lines with circles show non-durable consumption inequality. Smoothed lines are derived using local polynomial regression to identify trends. The unit of observation is the household, with consumption series equalized using the *OECD* equivalence scale. The study period spans from 2002 to 2023. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are unavailable.

about 1 to 1.37.[19]

A plausible explanation for this disparity between durable and non-durable consumption is that households with access to funds or borrowing capacity may have sought to hedge against high inflation in Turkey by reverting postponed consumption and investing in durable goods. To test this hypothesis, Figure B.15 illustrates the share of durable consumption in total consumption for each income decile. Overall, Figure B.15 indicates that the inflationary environment after 2021 could have driven up consumption inequal-

[19]The P50/P10 ratio stands out in particular, as it rose with a slight lag in 2023, coinciding with the presidential election year when the government relied heavily on expansionary fiscal and monetary policies. This delayed response aligns with the easing of borrowing constraints for the median earner.

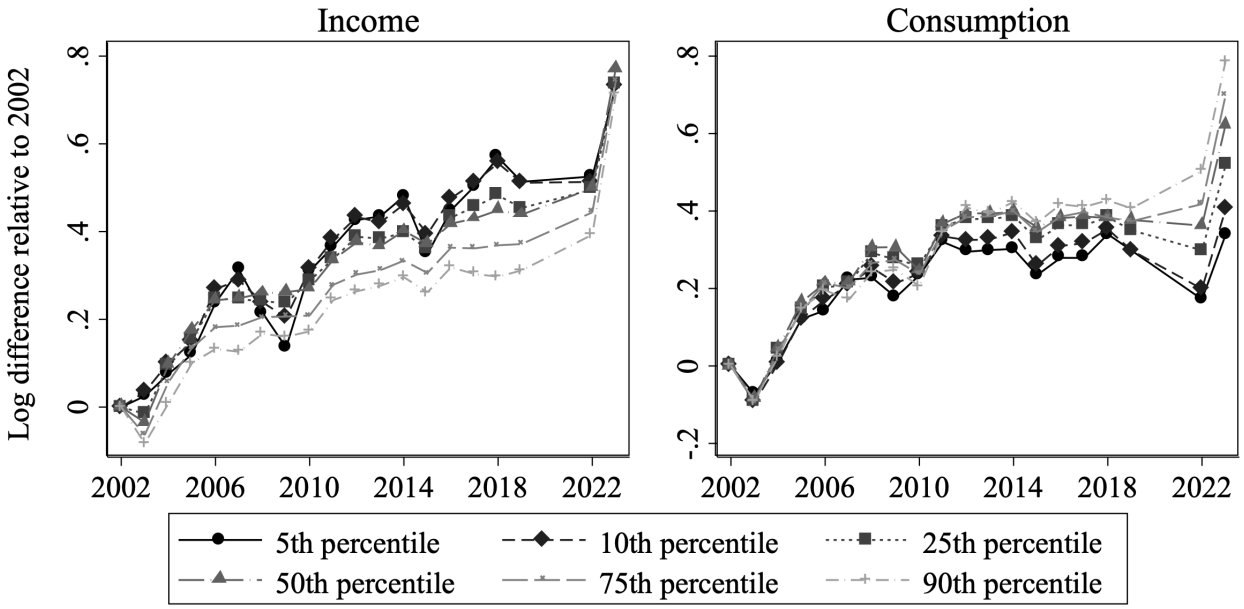
ity by heterogeneously impacting household consumption patterns with respect to income levels. As for the spike in consumption inequality in durable goods in 2022, the figure provides suggestive evidence that economic instability and unanchored inflation expectations led households in the top income decile to increase their purchases of durable goods as protection against inflation, which resulted in greater concentration of durable goods consumption among high-income households during the period of rising inflationary pressure. In particular, the share of durable consumption in total consumption for the top decile rose from 0.42 in 2019 to 0.52 in 2022. In contrast, lower income groups, facing financial constraints, experienced a decline in the share of durable goods expenditures over the same period. For example, this share for the lowest income decile decreased from 0.28 to 0.24.[20]

An intriguing phenomenon emerging from our income and consumption inequality estimates is that consumption inequality significantly exceeded income inequality in 2022 and 2023. Figure 5 shows that this trend began in 2016, but by 2023, the Gini coefficient for consumption reached 0.45, while that for income was 0.40. In line with our findings, Attanasio and Pistaferri (2016), in their survey paper, point out a shift in the empirical literature over time: earlier evidence suggested smaller changes in consumption inequality compared to income inequality, but recent studies employing more refined methodologies and data indicate similar changes between the two. Our study contributes to this literature by providing evidence that consumption inequality not only tracks income inequality but may, somewhat unexpectedly, exceed it.

To account for the discrepancy between our income and consumption inequality estimates, we employ a methodology used by Meyer and Sullivan (2013). In Figure 8, we plot the real change in income and consumption across various percentiles. In contrast to their findings, our results indicate that lower percentiles experienced higher income growth and lower consumption growth compared to upper percentiles. This finding is consistent with our evidence of a decrease in income inequality and an increase in consumption inequality. The dispersion in consumption changes in 2022 is particularly striking, with the growth difference between the fifth and ninetieth percentiles reaching 33 percentage points, compared to a maximum difference of 15 percentage points before 2020. Overall, we observe a marked contrast in consumption growth between the top and bottom income groups, while changes around the median remained relatively

[20] Supplementary analysis in Figure B.14 provides further evidence of the widening gap between the top decile and other groups. While the top decile accounted for 38% of total durable consumption in 2019, this proportion increased to 51% in 2022. This rise is particularly notable given that this ratio did not exceed 0.41 throughout the 2002-2019 period.

Figure 8: Real Changes in Income and Consumption at Various Percentiles



† *Notes*: This figure illustrates the real changes in income and consumption across different percentiles relative to 2002 levels. Results are reported using the *HBS* data set. The study period spans from 2002 to 2023. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are unavailable.

stable.[21]

To further investigate the divergent trends in income and consumption inequality towards the end of the analyzed period, Figure B.16 illustrates the change in the ratio of consumption to income across various percentiles. Consistent with our previous findings, Figure B.16 reveals that while wealthier households maintained a similar proportion of income allocated to consumption throughout the period, poorer households experienced a reduction in their consumption-to-income ratio, with the most substantial drop occurring in 2022. The ninetieth percentile saw an increase of 10 percent, while the fifth percentile experienced a decrease of 40 percent during this period.

Attanasio and Pistaferri (2016) suggest that various financial instruments such as savings, insurance, and credit can be utilized to reallocate resources across time and states of nature, and their availability may explain differences between consumption and income inequality. In our context, several factors may be at work. First, in the face of economic crisis and its poor management, lower-income households —more

[21] Surprisingly, Figure 8 also reveals a substantial real increase in both consumption and income across all deciles in 2023. Some genuine gains may have occurred, particularly due to the significant wage increases introduced by the government in response to the presidential and parliamentary elections held that year. However, this finding should be interpreted with caution. It is also likely that the substantial increase in 2023 is largely driven by the underreporting of inflation by the Turkish Statistical Institute, which artificially inflated real variables.

vulnerable to adverse conditions— may anticipate prolonged economic hardship, thus leading to increased precautionary savings. Second, households in lower percentiles may face relatively more severe difficulties in accessing credit to finance consumption compared to wealthier households.

5 Conclusion

Our comprehensive analysis of inequality dynamics in Turkey from 2002 to 2023 uncovers three empirically robust yet counterintuitive patterns that challenge conventional expectations about the distributional consequences of macroeconomic turbulence. First, wage inequality declined steadily throughout the period, coinciding with sustained increases in the minimum wage and a rising relative supply of skilled labor. Second, while income inequality initially mirrored this downward trend, it reversed in recent years as disparities in capital and entrepreneurial income widened. Third, and most strikingly, consumption inequality surged during the most recent period—outpacing income inequality—driven largely by a sharp rise in durable goods consumption among top-decile households, even as lower-income households curtailed such expenditures. This decoupling between income and consumption inequality highlights asymmetric household exposure to inflationary shocks, with affluent households better positioned to preserve or even expand consumption, likely through better access to credit markets and liquid asset buffers.

These findings shed new light on the distributional channels through which unorthodox macroeconomic policies operate in emerging market economies. The observed trends are consistent with theoretical expectations: aggressive minimum wage hikes compress wage distributions, while unconventional monetary tools—such as negative real interest rates and FX-protected deposit schemes—create uneven access to inflation hedges. The decline in the college wage premium marks a notable structural transformation that may weaken incentives for higher education and human capital investment. Meanwhile, the escalation of consumption inequality appears to reflect "consumption pulling forward" behavior among wealthier households anticipating continued inflation and depreciation, enabled by superior financial positioning. The FX-protected *KKM* scheme may have unintentionally amplified these dynamics by offering implicit government guarantees predominantly accessible to high-income savers, thereby subsidizing wealth preservation for the already well-positioned.

Beyond Turkey's specific institutional context, our findings contribute to the broader literature on heterodox policies in emerging markets by highlighting their complex and multi-dimensional distributional

consequences. They challenge binary classifications of such policies as inherently progressive or regressive. In particular, the divergence across wage, income, and consumption inequality trajectories highlights the importance of adopting a multi-dimensional lens in inequality analysis; relying on single metrics may obscure critical aspects of distributive change. For policymakers navigating macroeconomic instability in similar contexts, our results emphasize the need for systematic distributional impact assessments alongside aggregate policy evaluations. Turkey's experience illustrates that while heterodox measures may achieve certain macroeconomic stabilization goals, their distributive effects can be both substantial and unintended.

While our descriptive approach provides a rich empirical account of inequality under macroeconomic stress, causal inference is limited by data constraints. Future research should prioritize isolating causal mechanisms underlying these trends through quasi-experimental approaches or natural experiments. In particular, expanding access to long-term household-level panel data would enable more rigorous examination of consumption smoothing and portfolio reallocation strategies during inflationary episodes, while firm-level data could reveal how unconventional monetary policy affects employment and wage-setting across the skill spectrum. Comparative analysis with other emerging economies that implemented similar policies would further enhance the external validity and policy relevance of our findings. By building on the descriptive foundation established here, future research can provide more precise guidance for designing policy responses that balance macroeconomic stabilization objectives with distributional equity considerations.

References

Acemoğlu, D. and Üçer, E. M. (2020). High-quality versus low-quality growth in turkey: Causes and consequences. *Turkish economy at the crossroads: Facing the challenges ahead*, pages 37–89.

Aktuğ, E., Kuzubaş, T. U., and Torul, O. (2021). Heterogeneity in labor income profiles: evidence from turkey. *Empirical Economics*, 60(5):2557–2587.

Attanasio, O. P. and Pistaferri, L. (2016). Consumption inequality. *Journal of Economic Perspectives*, 30(2):3–28.

Aydemir, A. B. and Yazıcı, H. (2019). Intergenerational education mobility and the level of development. *European Economic Review*, 116:160–185.

Bakış, O. and Polat, S. (2015). Wage inequality in turkey, 2002–10. *Economics of Transition*, 23(1):169–212.

Bakış, O. and Polat, S. (2023). Wage inequality dynamics in turkey. *Empirica*, 50(3):657–694.

Bilgiç, M. E. and Stoeffler, Q. (2025). Growth, crises, and covid-19: Tracking poverty changes in turkey from 2003 to 2021. *Review of Development Economics*.

Caner, A., Derebasoglu, M., and Okten, C. (2024). Attainment and gender equality in higher education: Evidence from a large-scale expansion. *Journal of Human Capital*, 18(3):469–530.

Ceritoğlu, E., Cılasun, S. M., Küçükbayrak, M., and Sevinç, Ö. (2023). Household portfolios in türkiye: Results from the household finance and consumption survey. *Central Bank Review*, 23(4):100–132.

Demirtaş, N. M. and Torul, O. (2024). Intergenerational income mobility in turkey. *The Journal of Economic Inequality*, 22(1):185–209.

Ekşi, O. and Kırdar, M. G. (2015). An analysis of labor earnings in turkey: 2002-2011. *İktisat İşletme ve Finans*, 30(353):09–44.

Engbom, N. and Moser, C. (2022). Earnings inequality and the minimum wage: Evidence from brazil. *American Economic Review*, 112(12):3803–3847.

Filiztekin, A. (2015). Income inequality trends in turkey. *İktisat İşletme ve Finans*, 30(350):63–92.

Filiztekin, A. (2020). Income inequality in turkey: 2003–2015. *Turkey's political economy in the 21st century*, pages 63–84.

Gemicioğlu, S., Kızılırmak, B., and Akkoç, U. (2024). Relative contributions of indirect taxes and inflation on inequality: What does the turkish data reveal? *Review of Development Economics*, 28(1):286–309.

Günay, D. and Günay, A. (2011). 1933'den günümüze türk yükseköğretiminde niceliksel gelişmeler. *Yükseköğretim ve Bilim Dergisi*, 1(1):1–22.

Haughton, J. and Khandker, S. R. (2009). *Handbook on poverty+ inequality*. World Bank Publications.

International Labour Office (2020). Global wage report 2020–21: Wages and minimum wages in the time of covid-19. Technical report, International Labour Organization, Geneva.

Krueger, D., Perri, F., Pistaferri, L., and Violante, G. L. (2010). Cross-sectional facts for macroeconomists. *Review of Economic Dynamics*, 13(1):1–14.

Lustig, N. et al. (2020). *The" missing Rich'" in Household Surveys: Causes and Correction Approaches*, volume 520. ECINEQ, Society for the Study of Economic Inequality.

Meyer, B. D. and Sullivan, J. X. (2013). Consumption and income inequality and the great recession. *American Economic Review*, 103(3):178–83.

Öztunalı, O. and Torul, O. (2022). The evolution of intergenerational educational mobility in turkey. *Emerging Markets Finance and Trade*, 58(14):4033–4049.

Sefil-Tansever, S. and Yılmaz, E. (2024). Minimum wage and spillover effects in a minimum wage society. *Labour*.

Tamkoç, M. N. and Torul, O. (2020). Cross-sectional facts for macroeconomists: wage, income and consumption inequality in turkey. *The Journal of Economic Inequality*, 18(2):239–259.

Tekgüç, H. and Eryar, D. (2025). Redistribution trends in turkey: Unintended consequences vs. deliberate policies. *Review of Development Economics*.

Torul, O. and Öztunalı, O. (2018). On Income and Wealth Inequality in Turkey. *Central Bank Review*, 18(3):95 – 106.

A Appendix: Calculations

Wage Premium Calculations

Gender Premium:

In line with the *RED* guidelines, we define *gender premium* as the average male wage divided by the average female wage. We follow this definition in our calculations:

$$\text{Gender Premium}_t = \frac{\overline{w_t^m}}{\overline{w_t^f}} \tag{A.1}$$

where $\overline{w_t^m}$ and $\overline{w_t^f}$ denote the respective average wages of males and females.

Education Premium:

The *RED* guidelines calculate college (education) premium as the ratio of average wages between college-educated and high school-educated males. We mostly adhere to this definition in our calculations:

$$\text{Education (College) Premium}_t = \frac{\overline{w_t^c}}{\overline{w_t^h}} \tag{A.2}$$

In this analysis, $\overline{w_t^c}$ and $\overline{w_t^h}$ represent the average wages of male workers with at least an associate's degree and a high school diploma, respectively. This deviates slightly from the recommended RED classification scheme due to limitations in the resolution of the *SILC* data. Therefore, our cutoff is 14 years of education with a degree instead of 16 years.

In developing countries, including Turkey, high school graduation also plays a role in wages. One way to examine this is by measuring the high school premium. Following the same methodology, we calculate the high school premium as the wage ratio of those with a high school diploma to those with only a secondary school education:

$$\text{High School Premium}_t = \frac{\overline{w_t^h}}{\overline{w_t^s}} \tag{A.3}$$

where $\overline{w_t^s}$ denotes the average wage of secondary school-educated males.

Experience Premium:

According to the he *RED* guidelines, *experience premium* refers to the difference in earnings between mid-career men (aged 45-55) and younger men (aged 25-35). This is calculated as the average wage of older men

(45-55) divided by the average wage of younger men (25-35):

$$\text{Experience Premium}_t = \frac{\overline{w_t^o}}{\overline{w_t^y}} \tag{A.4}$$

where $\overline{w_t^o}$ and $\overline{w_t^y}$ denote the average respective wages of males aged 45-54 and aged 25-34 due to limitations in data resolution.

It is important to note that the concept of *premium* in these definitions is not intended to imply causation. Rather, it serves to describe the observed wage differentials in the current context. We present the empirical estimates of education (college and high school), experience, and gender premia in Figure B.3.

Inequality Measure Calculations

After constructing wage, income, and consumption series, we proceed to calculate various inequality measures for each variable of interest. These measures include the variance of the natural logarithm (var-log), percentile ratios (P90/P50 and P50/P10), and the Gini coefficient following *RED* guidelines.[22].

We calculate the variance of the natural logarithm of a variable $y_{i,t}$ as follows:

$$\text{Var}\left[\log(y_t)\right] = \frac{1}{n}\sum_{i=1}^{n}\left\{\left[\log(y_{i,t}) - \mu_t\right]^2\right\} \tag{A.5}$$

where $y_{i,t}$ denotes wage, income, or consumption in year t, i denotes individual index, μ_t denotes the mean value of the natural logarithm of the variable of interest, and n denotes the number of observations.

After sorting wage, income, and consumption variables in ascending order, we construct P90/P50 ratio by dividing the 90^{th} percentile's value by that of the median and the P50/P10 ratios by dividing the median's value to that of the 10^{th} percentile.

We calculate the Gini coefficient, a conventional inequality metric of *relative mean difference* as the mean of the absolute difference between every possible pair of individuals in a sample of n individuals,

[22]These four inequality measures capture different distribution aspects and possess distinct properties (e.g., scale invariance, transfer principle adherence). The choice of a specific measure depends on the research question and the desired emphasis within the distribution (Haughton and Khandker, 2009)

divided by the mean of the variable of interest, μ_t, as follows:

$$\text{Gini Coefficient} = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}|y_{i,t} - y_{j,t}|}{2n^2\mu_t} \tag{A.6}$$

where $y_{i,t}$ and $y_{j,t}$ denote wage, income or consumption levels of individuals i and j with $i \neq j$.

B Appendix: Figures and Tables

Table B.1: Descriptive Statistics

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
											HBS												
Male	Share of Uni. Grad.	0.11	0.11	0.12	0.11	0.12	0.12	0.14	0.15	0.15	0.17	0.20	0.19	0.20	0.19	0.21	0.20	0.20	0.24			0.25	0.27
	Age	38.39	39.04	39.33	39.37	39.22	39.26	39.34	39.43	39.66	39.40	39.78	39.78	40.13	40.62	40.46	40.73	40.81	40.92			41.24	41.13
	LFPR	0.67	0.66	0.67	0.66	0.67	0.66	0.72	0.74	0.73	0.74	0.72	0.73	0.73	0.71	0.71	0.72	0.73	0.71			0.73	0.71
	Sample Size	6252	16312	5594	5652	5877	5708	5532	6287	6387	6497	6512	6604	6592	7276	7454	7566	7342	6724			7044	6305
Female	Share of Uni. Grad.	0.27	0.28	0.25	0.24	0.25	0.26	0.27	0.28	0.31	0.32	0.34	0.37	0.35	0.34	0.37	0.35	0.35	0.39			0.41	0.43
	Age	36.22	36.86	37.29	37.07	37.02	36.54	37.10	37.29	37.58	37.67	37.49	37.36	38.23	38.61	38.91	39.08	39.19	39.30			39.58	39.18
	LFPR	0.22	0.25	0.25	0.25	0.24	0.25	0.28	0.34	0.31	0.32	0.33	0.33	0.33	0.32	0.32	0.33	0.32	0.33			0.31	0.30
	Sample Size	858	2441	903	984	942	1098	1192	1457	1530	1703	1915	1836	1909	2179	2368	2346	2338	2363			2463	2319
											SILC												
Male	Share of Uni. Grad.				0.12	0.13	0.13	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.23	0.23	0.24	0.25	0.25	0.27	0.28	0.29	0.31
	Age				39.52	39.63	39.25	39.18	39.45	39.47	39.73	39.86	39.83	40.00	40.12	40.30	40.38	40.48	40.58	40.64	40.65	40.82	40.75
	LFPR				0.72	0.72	0.74	0.73	0.72	0.72	0.72	0.72	0.71	0.71	0.70	0.71	0.71	0.71	0.70	0.69	0.70	0.70	0.70
	Sample Size				6355	6547	6842	6860	6977	8817	10276	11590	13241	13094	13050	13019	13531	13629	13618	14107	14248	13351	13826
Female	Share of Uni. Grad.				0.28	0.27	0.29	0.33	0.36	0.36	0.35	0.36	0.37	0.39	0.42	0.42	0.40	0.41	0.43	0.47	0.48	0.49	0.51
	Age				37.46	37.17	36.88	37.01	37.19	37.66	37.71	37.83	38.18	37.97	38.25	38.53	38.95	38.98	38.75	38.81	38.97	38.94	38.97
	LFPR				0.28	0.28	0.28	0.29	0.29	0.28	0.29	0.29	0.28	0.28	0.29	0.28	0.29	0.29	0.27	0.28	0.29	0.29	0.29
	Sample Size				1212	1266	1389	1424	1556	1984	2481	2893	3360	3648	3853	3906	4214	4363	4217	4629	4874	4818	5313

† *Notes*: Share of university graduates, average age, and sample size are calculated and presented separately for males and females for the workforce, defined as individuals with annual earnings above half of the 2002 real monthly minimum wage. Labor force participation rates (*LFPR*) are calculated using the full dataset. Ages are calculated by assigning the midpoint of each 5-year age interval.

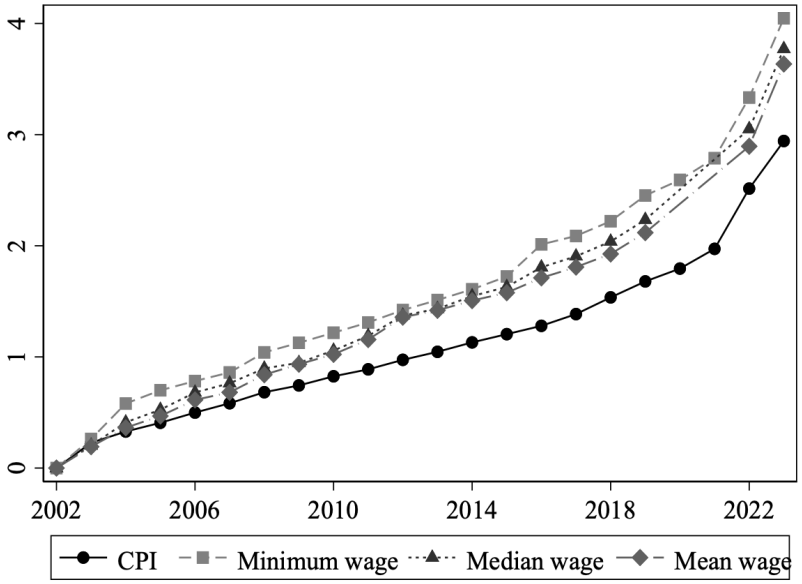
We disaggregate the data to understand the factors contributing to the observed wage convergence, following our analysis of aggregate wage inequality. Adhering to *RED* guidelines where possible, we estimate wage premiums for four key metrics —education (college and high school), gender, and experience— from 2002 to 2023 (Figure B.3).

The education premium in our study reflects the wage difference between males with an education level above high school (including bachelor's and postgraduate degrees) and those with only a high school diploma rather than directly comparing college-educated males with high school-educated males. This measurement is unlikely to significantly impact our estimations due to the relatively small number of enrollments to graduate programs in Turkey.[23]

Figure B.3 reveals an intriguing hump-shaped trend in the college premium, which persists regardless of potential survey biases, suggesting the robustness of this phenomenon. The increasing portion of

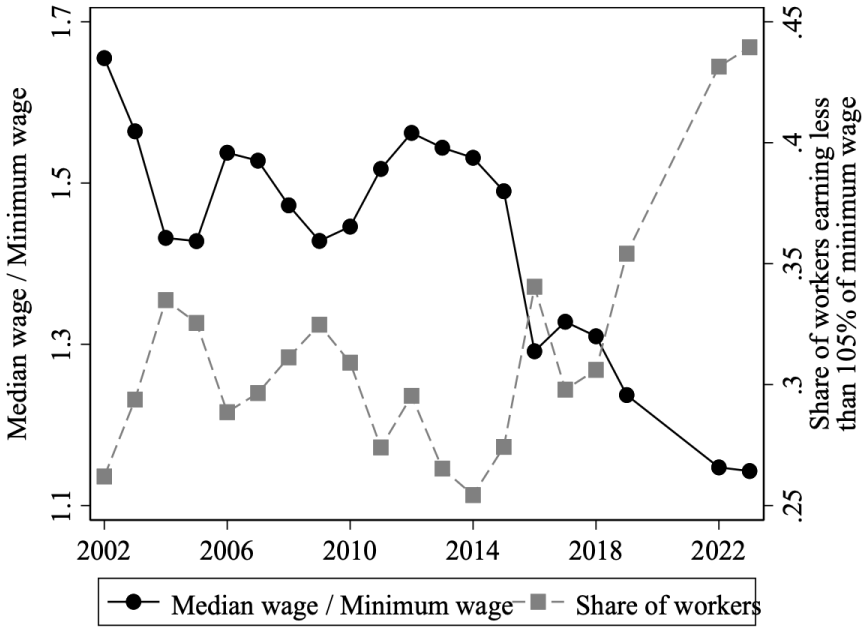
[23] According to the Council of Higher Education of Turkey, the 2023-2024 academic year saw 6,562,797 students enrolled in undergraduate programs (including associate and bachelor's degrees), compared to only 518,492 in graduate programs (master's and doctorate degrees). Data available at the Council of Higher Education's statistics page (in Turkish).

Figure B.1: Log Value of Normalized *CPI*, Minimum, Median, and Mean Wage



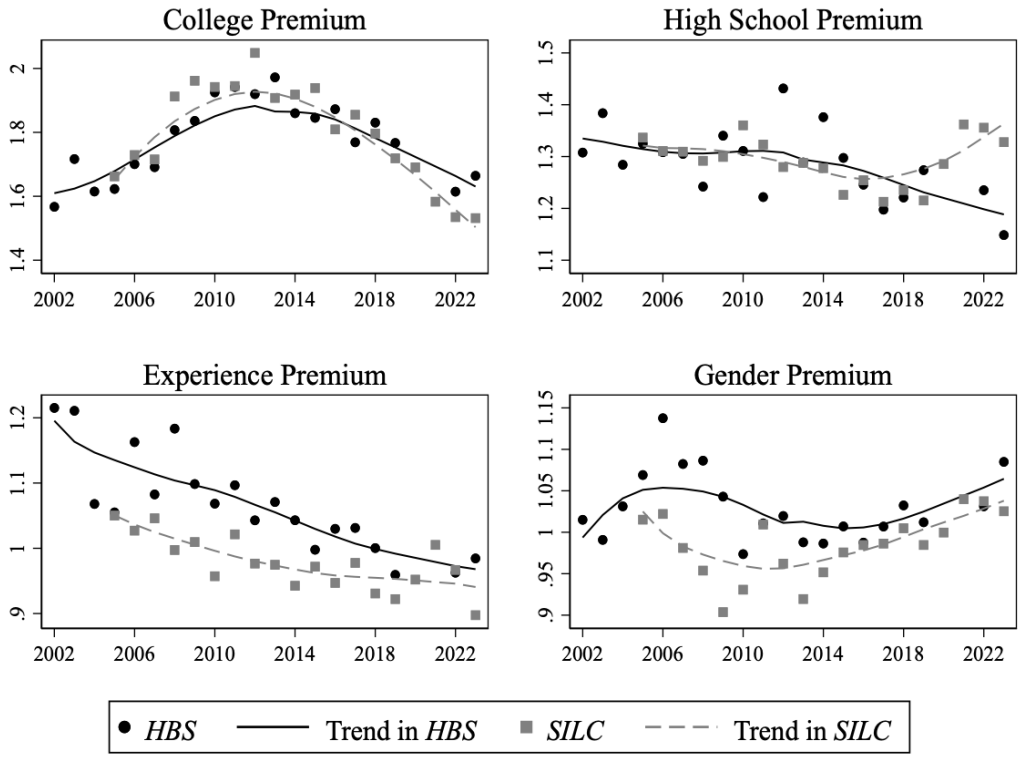
† *Notes*: This figure illustrates the difference in the growth of wages and inflation in Turkey. Data is derived from *HBS* for wage-related calculations, and due to the suspension of the *HBS* data collection during the COVID-19 pandemic in 2020 and 2021, they are unavailable. The data series are normalized, with 2002 set as the base year (zero value).

Figure B.2: Convergence to Minimum Wage



† *Notes*: This figure illustrates the convergence of wages to the monthly minimum wage for the general public in Turkey. The black line represents the ratio of median wage to minimum wage, and the gray line shows the share of the population earning less than 105% of the minimum wage. The unit of observation is individual. The study period spans from 2002 to 2023. Due to the suspension of the *HBS* data collection during the COVID-19 pandemic in 2020 and 2021, they are unavailable. The correlation between the variables is -0.873 (significant at p =1%).

Figure B.3: Wage Premiums

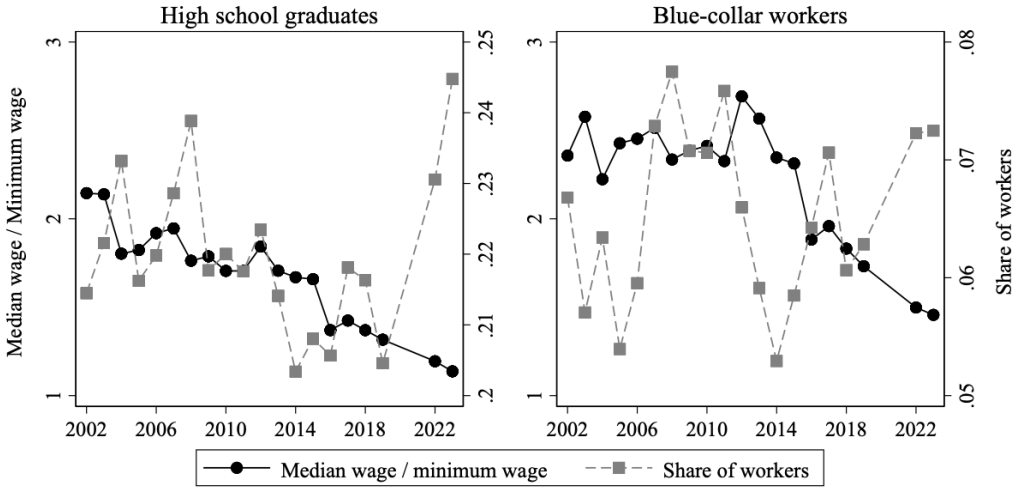


† *Notes*: This figure illustrates the evolution of 4 key metrics. Results are reported using the *HBS* and *SILC* data sets. Black solid lines with circles denote results from the *HBS*, while gray dashed lines with squares represent *SILC* data. Smoothed lines are derived using local polynomial regression to identify trends. The unit of observation is individual. Due to the suspension of the *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from the *SILC*.

the curve aligns with Turkey's economic boom years, characterized by consistent Total Factor Productivity (*TFP*) growth. However, the drivers behind the decreasing portion are probably more complex and likely influenced by two key events:

1. Rapid university expansion: Following 2006, Turkey experienced a significant increase in the number of universities, with some potentially offering lower-quality education compared to established institutions (Günay and Günay, 2011). Considering the typical 2-4 year timeframe for graduates to enter the workforce, the peak of the hump shape coincides with the implementation of this policy. This rapid expansion likely increased the supply of university graduates.
2. Stagnant educational quality: Since the Great Recession, Turkey has not experienced sustained growth in educational quality. This lack of improvement, combined with potential changes in employer demand for skills, could have contributed to the decline in the college premium (Acemoğlu and Üçer, 2020).

Figure B.4: Breakdowns for Blue-Collar Workers



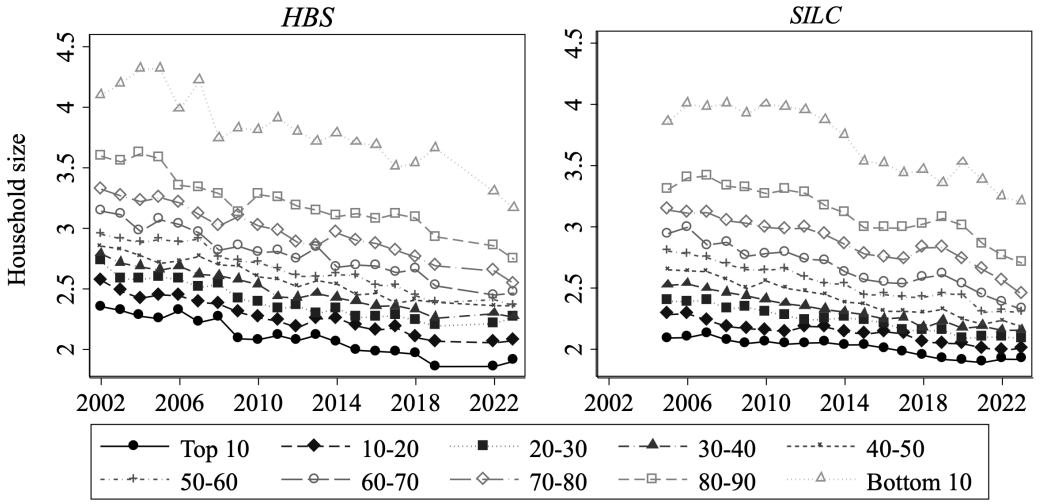
† *Notes*: This figure illustrates the evolution of wages compared to minimum wage using educational attainment and occupational breakdown. The unit of observation is individual. The study period spans from 2002 to 2023. Due to the suspension of the *HBS* data collection during the COVID-19 pandemic in 2020 and 2021, they are unavailable. The correlation between the variables in the first graph is -0.056, while in the second graph it is -0.247 (both insignificant at p =10%).

An examination of labor market trends across occupational groups reveals a disproportionate impact of recent policies on white-collar workers. A comparison of Figure 3 and Figure B.4 illustrates this disparity, with less pronounced effects observed in occupational groups beyond white-collar workers.

Data from *HBS* show that professionals experienced the most significant wage decline relative to the

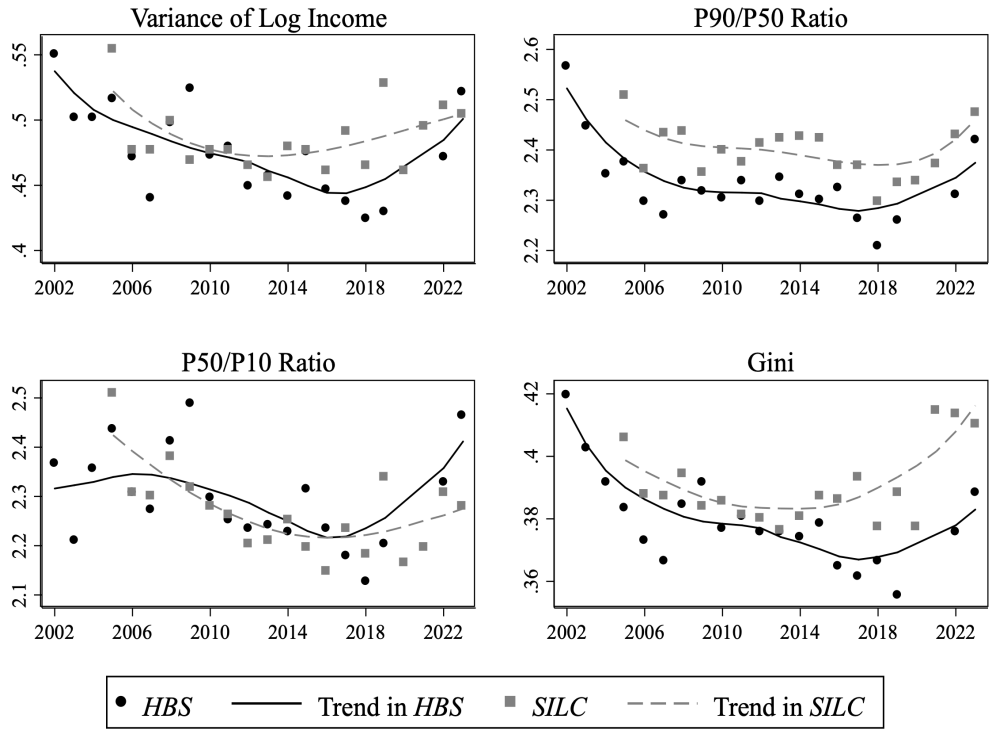
minimum wage during the period of unconventional monetary policy. Their median wage, expressed in minimum wage equivalents, fell by 25.1% (from 2.39 in 2019 to 1.79 in 2023), while the decrease for associate professionals is 15.6% (from 1.73 in 2019 to 1.46 in 2023). These findings suggest that unconventional monetary policies may have had a differential impact on occupational wage dynamics, with professionals demonstrating lower resilience compared to other occupations.

Figure B.5: Mean Household Size by Income Deciles



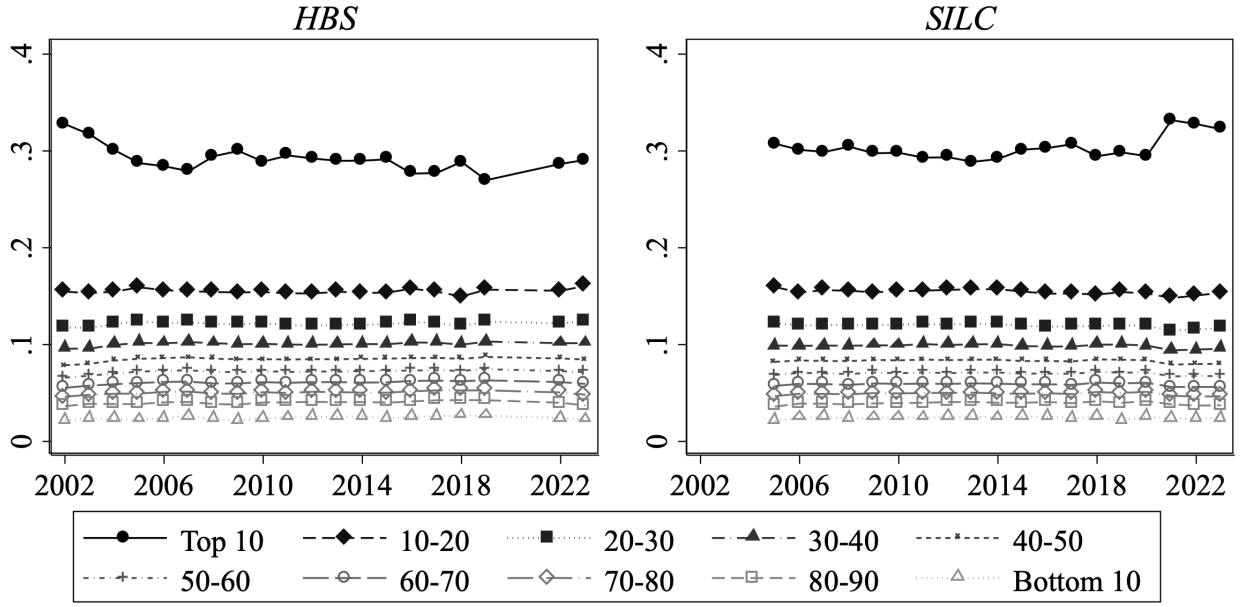
† *Notes*: This figure illustrates the evolution of mean household size for each income decile. Results are reported using the *HBS* and *SILC* data sets. The left panel displays results from the *HBS*, and the right panel shows results from *SILC*. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

Figure B.6: Inequality in Raw Disposable Income



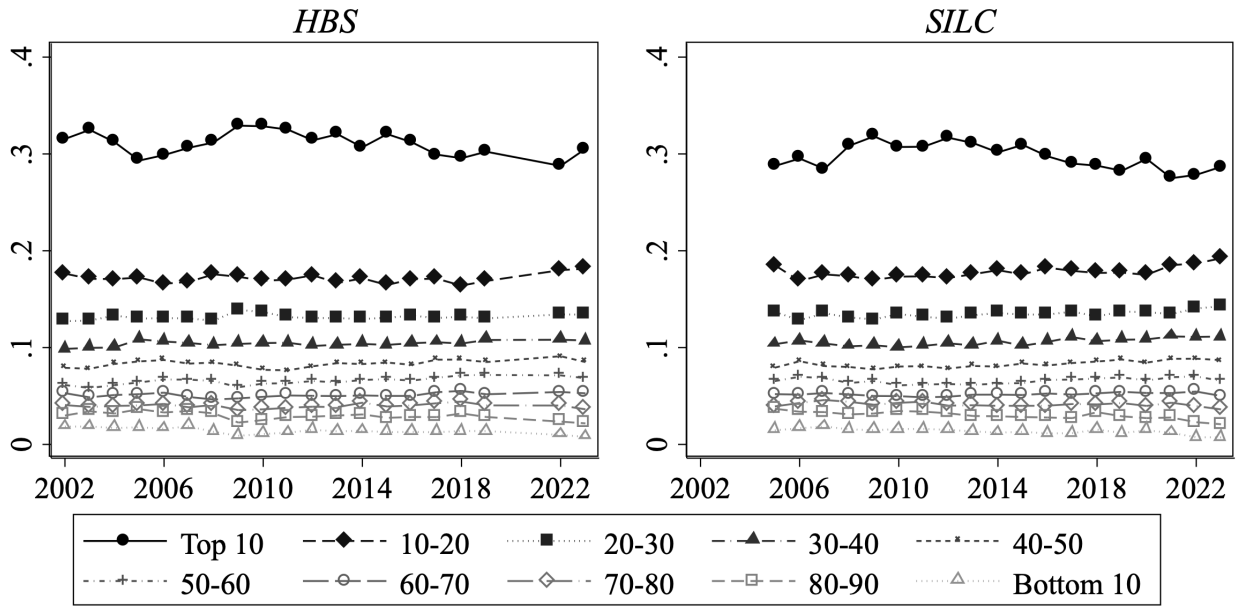
† *Notes*: This figure illustrates the evolution of raw disposable income inequality. Results are reported using the *HBS* and *SILC* data sets. Black solid lines with circles denote results from the *HBS*, while gray dashed lines with squares represent *SILC* data. Smoothed lines are derived using local polynomial regression to identify trends. The unit of observation is the household. We do not equalize income series but instead use total household income. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

Figure B.7: The Share of Deciles in Total Income



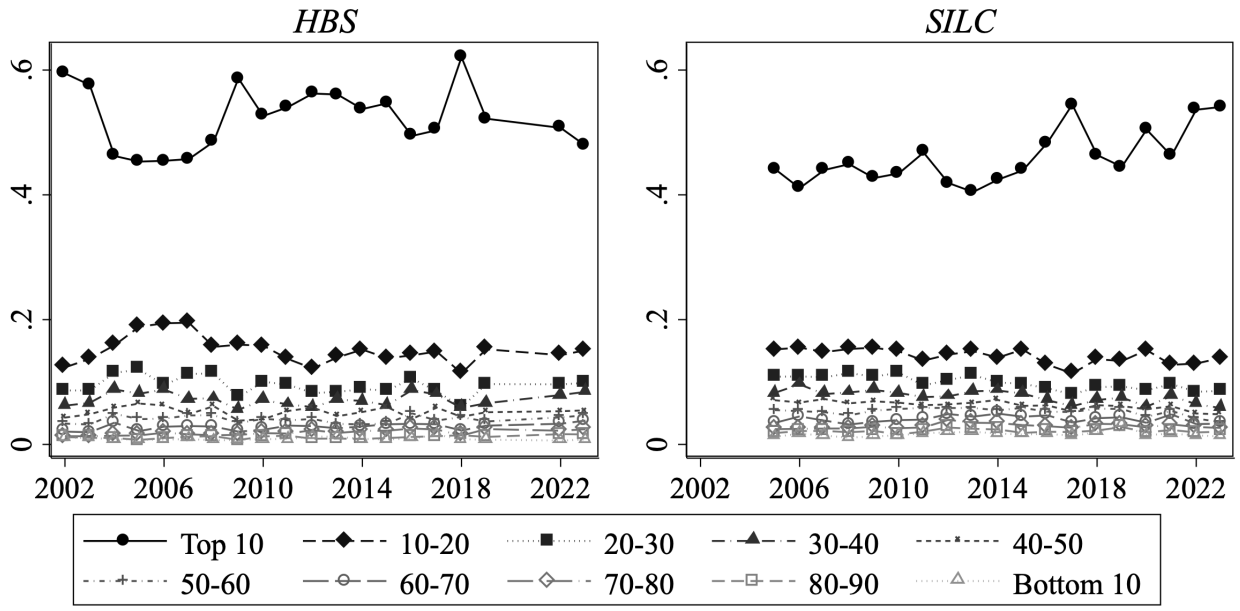
† *Notes*: This figure illustrates the change in the share of total income held by each income decile. Results are reported using the *HBS* and *SILC* data sets. The left panel displays results from the *HBS*, and the right panel shows results from *SILC*. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

Figure B.8: The Share of Deciles in Total Labor Income



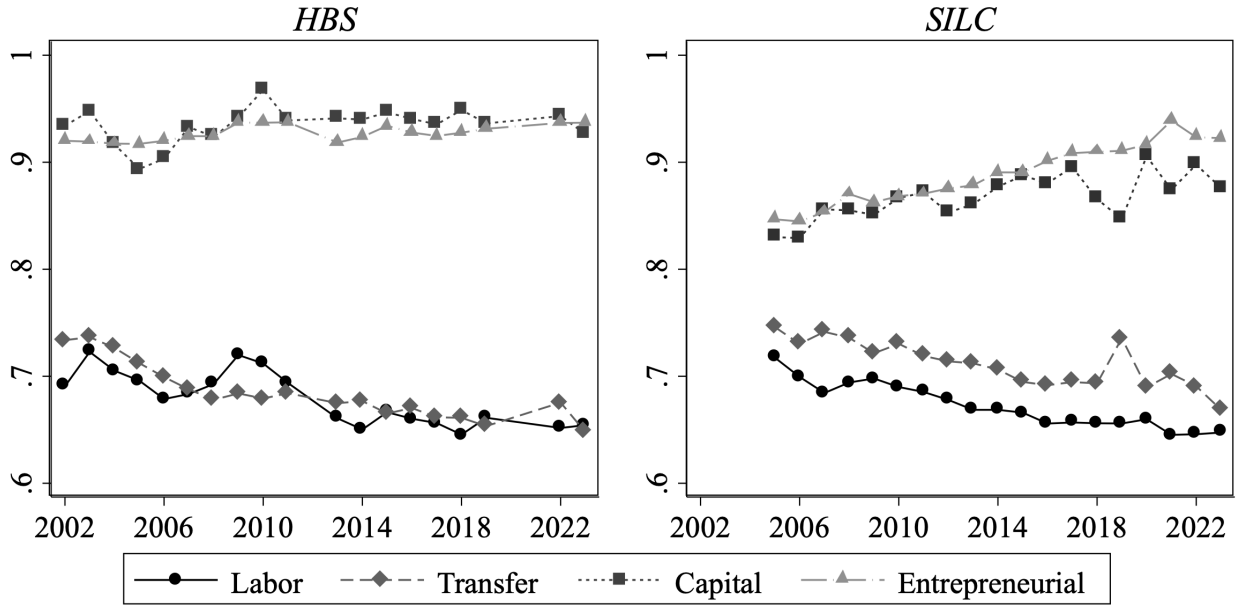
† *Notes*: This figure illustrates the change in the share of total labor income held by each income decile. Results are reported using the *HBS* and *SILC* data sets. The left panel displays results from the *HBS*, and the right panel shows results from *SILC*. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

Figure B.9: The Share of Deciles in Total Capital Income



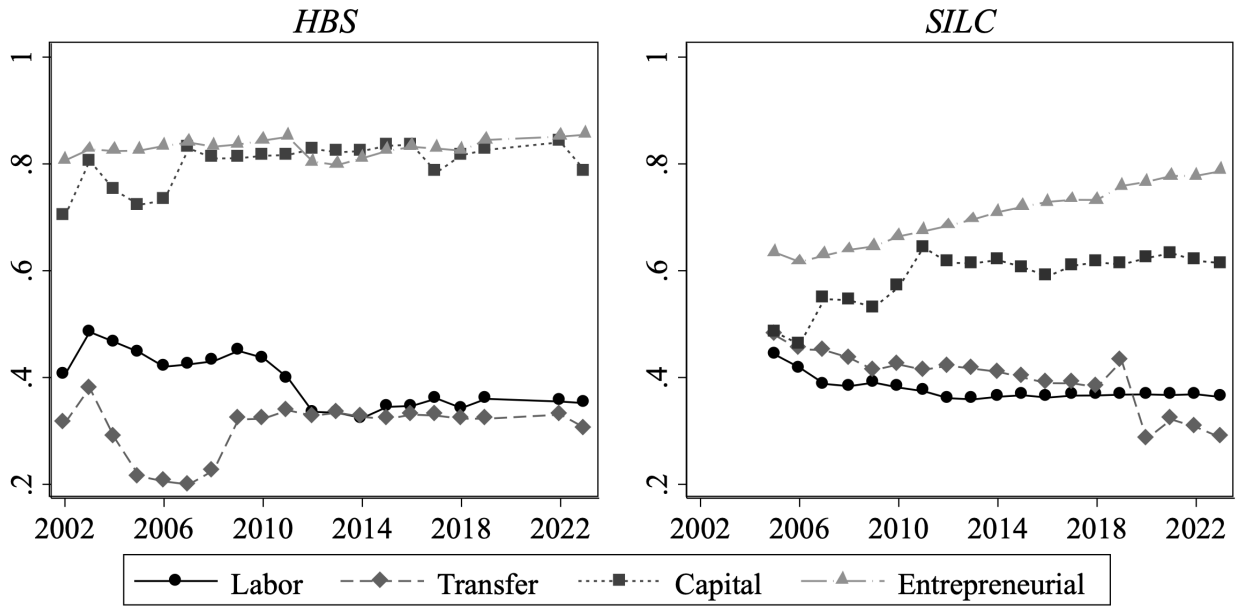
† *Notes*: This figure illustrates the change in the share of total capital income held by each income decile. Results are reported using the *HBS* and *SILC* data sets. The left panel displays results from the *HBS*, and the right panel shows results from *SILC*. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

Figure B.10: Gini Coefficients for Labor, Transfer, Capital, and Entrepreneurial Income



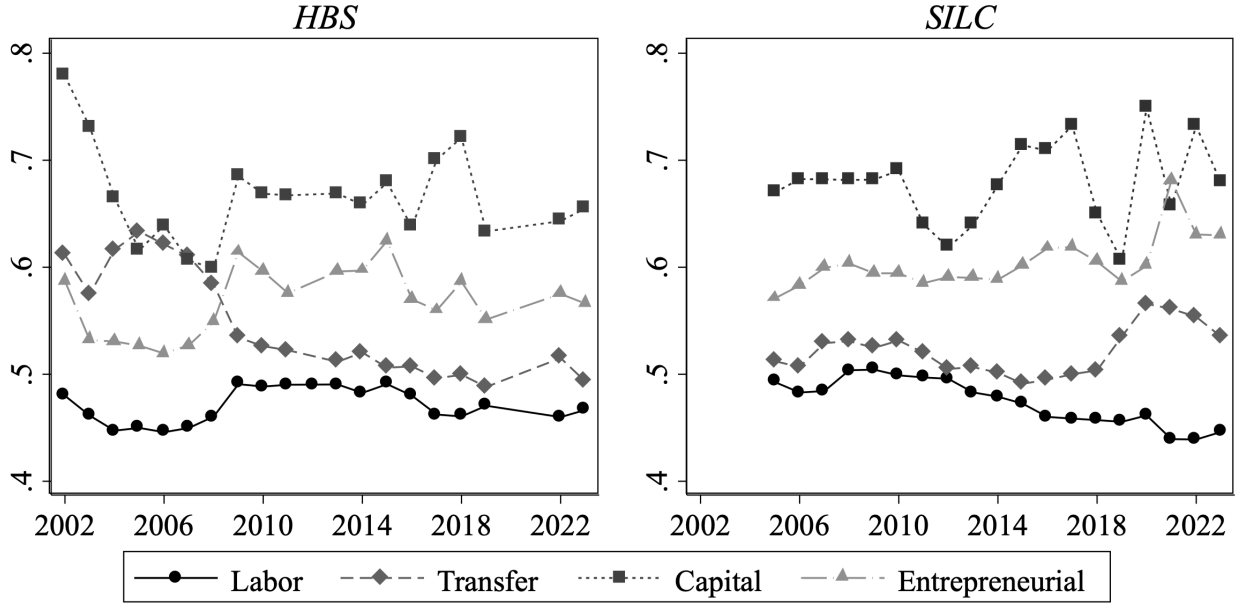
† *Notes*: This figure illustrates the evolution of labor, transfer, capital, and entrepreneurial income inequality. Gini coefficient results are reported using the *HBS* (left panel) and *SILC* (right panel) data sets. The unit of observation is the household, with income component series equalized using the *OECD* equivalence scale. For this analysis, we assigned a value of 0 to households that did not report any relevant income component. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

Figure B.11: Share of Households with Zero Income Component



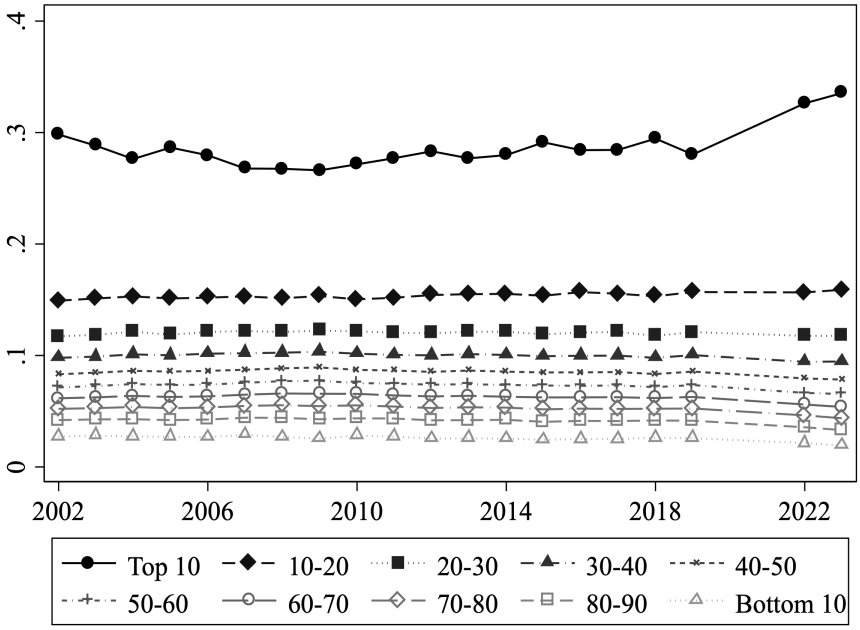
† *Notes*: This figure illustrates the evolution of the share of households with zero labor, transfer, capital, and entrepreneurial income. Results are reported using the *HBS* (left panel) and *SILC* (right panel) data sets. The unit of observation is the household. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

Figure B.12: Gini Coefficients for Income Components among Households with Positive Income



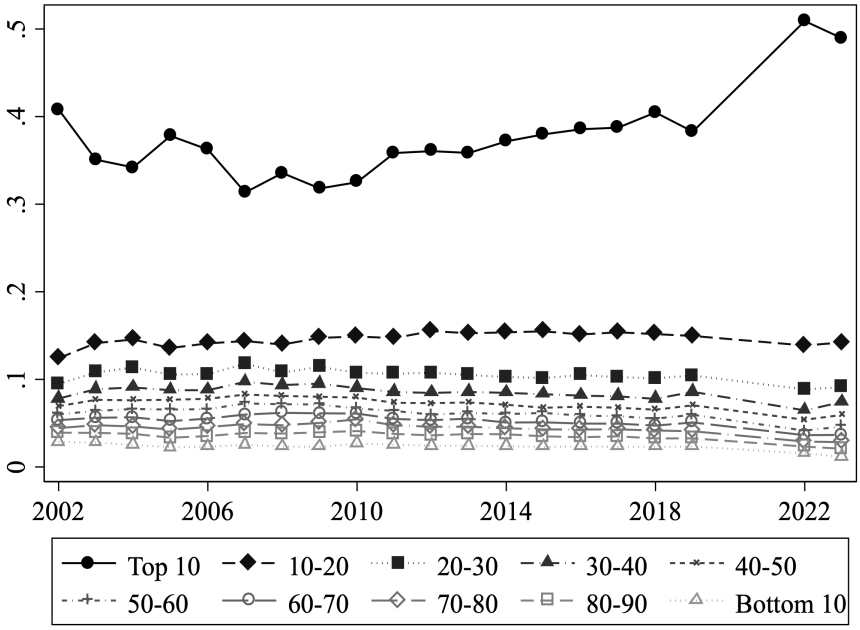
† *Notes*: This figure illustrates the evolution of labor, transfer, capital, and entrepreneurial income inequality. Gini coefficient results are reported using the *HBS* (left panel) and *SILC* (right panel) data sets. The unit of observation is the household, with income component series equalized using the *OECD* equivalence scale. For this analysis, we excluded households that did not report any relevant income component. The analysis period covers 2002-2023 for *HBS* and 2005-2023 for *SILC*. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are available only from *SILC*.

Figure B.13: The Share of Deciles in Total Consumption



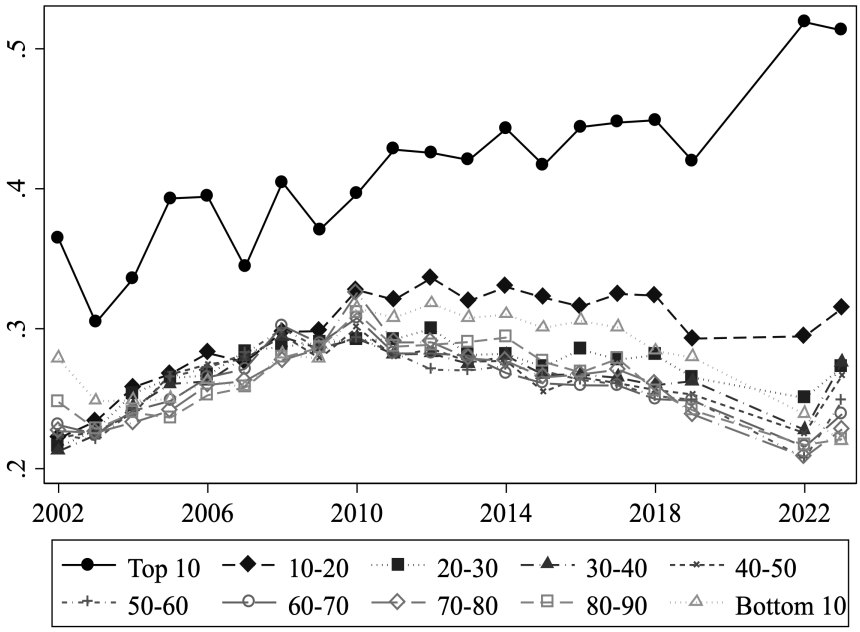
† *Notes*: This figure illustrates the share of total consumption expenditure by each income decile. Consumption deciles are constructed based on consumption expenditure. Results are reported using the *HBS* data set. The study period spans from 2002 to 2023. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are unavailable.

Figure B.14: The Share of Deciles in Total Durable Consumption



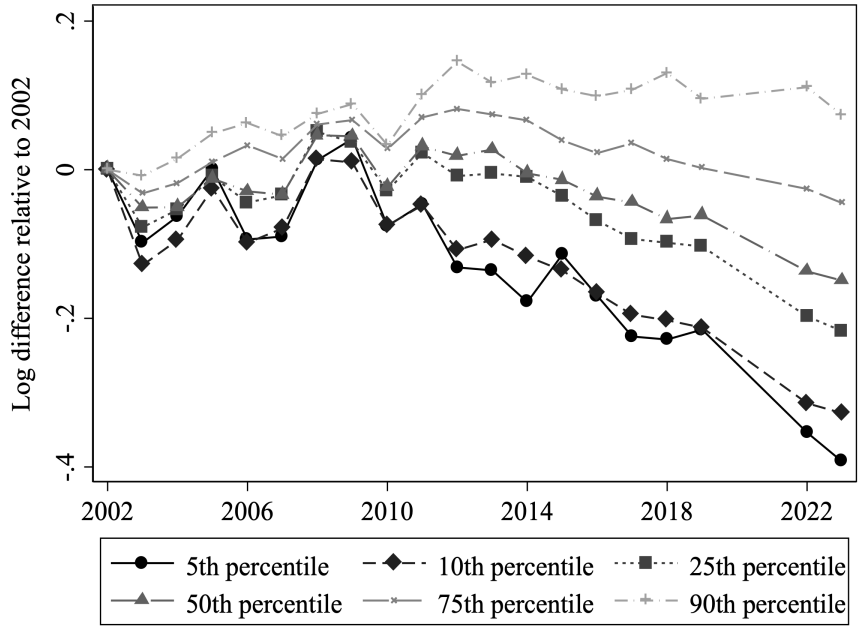
† *Notes*: This figure illustrates the share of total durable consumption expenditure by each income decile. Consumption deciles are constructed based on consumption expenditure. Results are reported using the *HBS* data set. The study period spans from 2002 to 2023. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are unavailable.

Figure B.15: The Share of Durables in Total Consumption by Decile



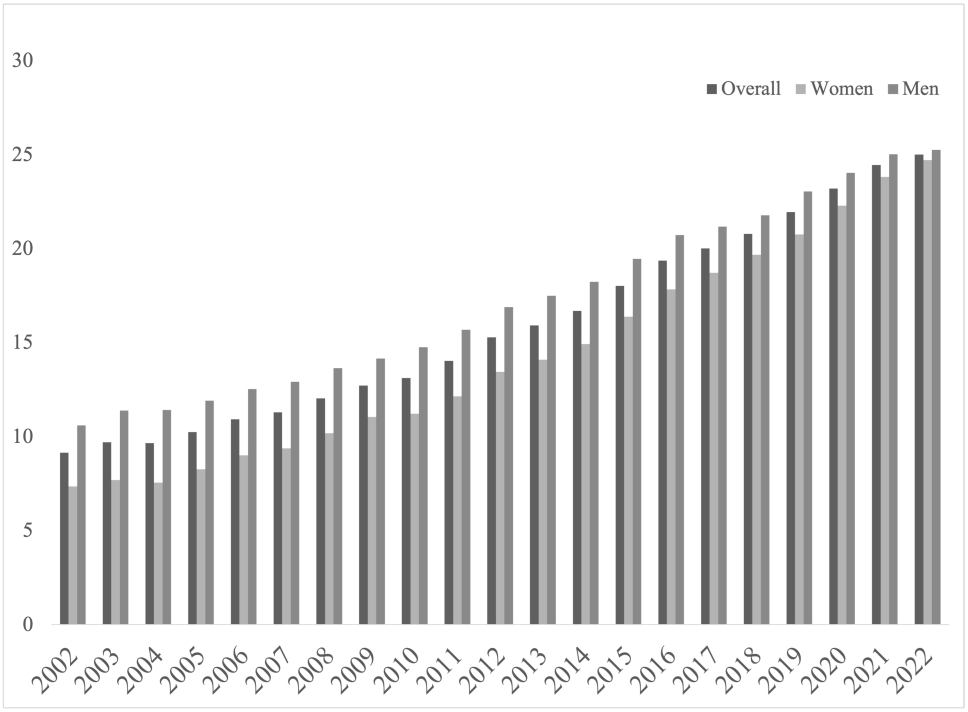
† *Notes*: This figure illustrates the share of total durable consumption in total consumption for each income decile. Consumption deciles are constructed based on consumption expenditure. Results are reported using the *HBS* data set. The study period spans from 2002 to 2023. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are unavailable.

Figure B.16: Changes in Consumption-to-Income Ratio



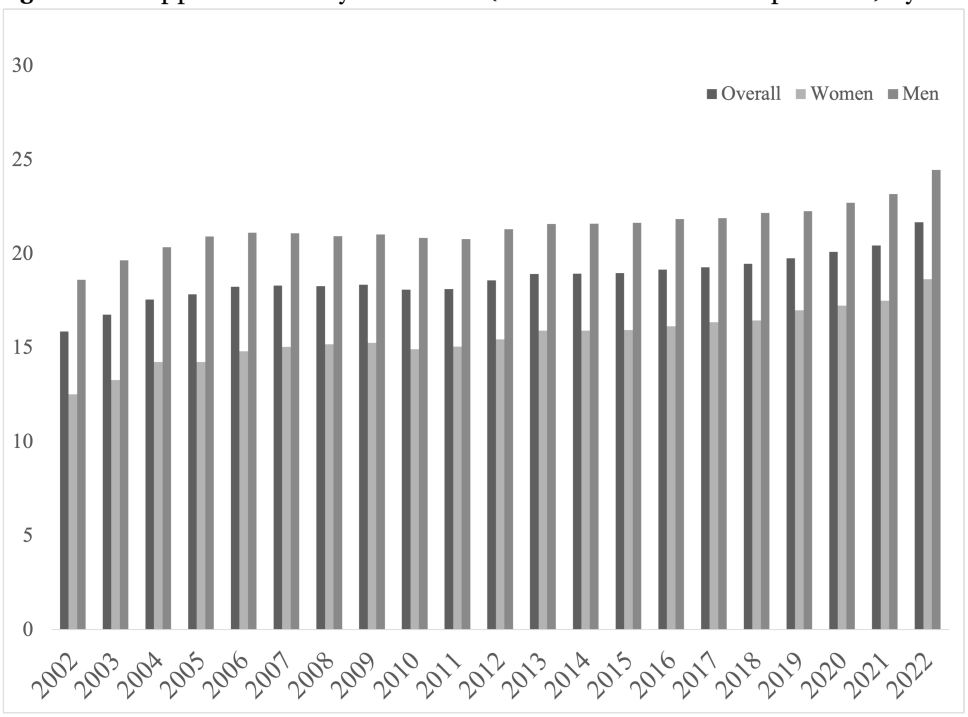
† *Notes*: This figure illustrates the changes in consumption-to-income ratio across different percentiles relative to 2002 levels. Income percentiles are constructed using household income, while consumption percentiles are constructed using consumption expenditure. Results are reported using the *HBS* data set. The study period spans from 2002 to 2023. Due to the suspension of *HBS* data collection during the pandemic in 2020 and 2021, estimates for these years are unavailable.

Figure B.17: Tertiary Education (% of 25-64 Year-Old Population) by Year



†*Source*: OECD Education Database. The estimates for 2020 are interpolated linearly using the neighboring years.

Figure B.18: Upper Secondary Education (% of 25-64 Year-Old Population) by Year



†*Source*: OECD Education Database. The estimates for 2020 are interpolated linearly using the neighboring years.